FEBRUARY 1961

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This magazine exists to provide an outlet for a wide variety of scholarly studies in land economics. It reflects the growing emphasis on planning for the wise use of urban and rural land to meet the needs of an expanding population. Housing, air and water use, and land reform are within its scope. It views land economics as economics in the broadest sense with particular emphasis on public action to achieve the best use of resources in the public interest.

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LAND ECONOMICS

a quarterly journal of

PLANNING, HOUSING & PUBLIC UTILITIES

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VOLUME XXXVII
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The New Agrarian Reform Law and Economic Development in Venezuela†

By HUGH L. COOK*

EARLY in 1960 the new government of Venezuela adopted an agrarian reform law. It has been represented by President Betancourt both as his program for social justice and as his program for economic development. Some have viewed the law with alarm. An example is the widely read newspaper *El Universal.* This was not because the paper is devoted to the doctrine of laissez faire nor because it is indifferent to social problems, but for other reasons. The editor felt that the law as written did not get to the heart of the problem and would undermine such stability and such development rates as now exist.

Many observers from the United States are prone to view this law with sympathy for a number of reasons. Not the least of these is a desire to see it work because the new regime is organized as a democracy. Though previous governments have been organized along these lines they have not long functioned as such. Indeed, except for interim periods of a few months during the entire 20th century, these regimes have been describable as dictatorships characterized by considerable "toughness." They have maintained friendly relations with the United States and have achieved some growth for the country. However, much of the development problem still remains and evidence of social unrest is on every hand.

This paper aims to describe some of the bases for social unrest, some facets of the development problem, and some of the important respects in which the economy may differ from that found in many underdeveloped countries. These differences could affect the outcome of agrarian reform.

† The author is especially indebted to Professor R. J. Penn, Department of Agricultural Economics, University of Wisconsin, for many valuable suggestions; and to Jorge Schuster, Direccion de Planification, Ministerio de Agricultura y Cria, Republic of Venezuela, for data and other reports on progress of the agrarian reform. The author also is grateful to Luis F. Yepez, and Professor C. W. Loomer, University of Wisconsin, for comments on an earlier draft of this manuscript.

* Professor of Agricultural Economics, University of Wisconsin.

Some Facets of the Development Problem

Simply stated, the present goals for economic development appear to call for achieving self-sufficiency in all agricultural requirements at the same time.[1] The new government likewise appears to pursue policies to develop industrial production, especially of essential items. In search of these objectives some actions result which tend to affect adversely the favorable climate for foreign investment which formerly characterized the administration of the dictators Juan Vincente Gomez and Perez Jimenez, covering the period 1908–1957 inclusive. This climate in fact was so favorable that up until 1958 there was more United States investment in Venezuela alone than in all of Western Europe.[2] One can sympathize with the nation's desire to free itself from what Dr. Lewis Hanke called the "New Dictator," oil, which "answers only to the demands of the market in the United States and in Western Europe, and waits for the signals to be called from abroad."[3] It is obvious also that the great oil wealth which accrues to the government has not brought half the people into the market economy nor substantially improved their welfare. Stated broadly, the goal is about the same as that which is associated with what is termed "nationalism" in numerous countries around the world.

The desirable approach to achieving this goal, however, well may be quite different from what is appropriate in many other countries. For one thing, due to the government's oil wealth as described below, the development of an otherwise uneconomic industry to save exchange is less justifiable than if exchange supplies were a primary problem. Nor is it as necessary for savings to be created in agriculture to serve as a source of investment funds for the rest of the economy as it has been historically in many countries. Since the central government is not heavily dependent on taxation for revenue, its taxation and tariff policies can be different. Also the land policies can be different because social prestige and economic power are not as deeply rooted in land ownership as they are in many of the underdeveloped countries of Asia and Latin America. For example, "land for the tiller" or "land for the landless" may not have the long-run basic appeal that it would have in a country where the economy has long been dominated by producers of agricultural crops.

However these goals are stated and whatever may be the values which the people have, as the author sees it, the basic problem of national development is how to get the large percent of the population who are squatting in the "ranchos" on the foothills around Caracas, and in other towns of any size, absorbed into the market economy in a way that they will view as productive and socially satisfactory.[4] The restlessness of this group and their unproductivity is the greatest evidence of underdevelopment in the economy. These people are presently supported by various relief measures which range from doles to highway maintenance, the kind of program and the amount of benefits changing

[1] Lorne T. Sonley, *Raising Incomes of Rural People in Venezuela During the Decade Ahead* (Caracas, Venezuela: Ministry of Development, Republic of Venezuela, February 1959).

[2] Riley Dougan, *Venezuela, Report of Latin American Trade Mission of Agricultural Extension Specialists,* April 19–May 26, 1960, p. 46.

[3] Lewis Hanke, *Mexico and the Caribbean* (Princeton, New Jersey: D. Van Nostrand Co., Inc., 1959), p. 65.

[4] This point is ably made in the group *Report of Latin American Trade Mission of Agricultural Extension Specialists,* previously cited. That report stressed the importance of absorbing subsistence producers of any kind into the market economy.

frequently. Most of them came from rural areas within the past generation, which in itself indicates dissatisfaction with opportunities on farms and an awakening desire for more of the goods and services of a market economy.

There is ample evidence that several important segments of the population are extremely restless. Laborers are restless because of high levels of unemployment, high and rapidly inflating price levels, and low incomes relative to costs of living. Farmers and ranchers are restless because of "shortages" of labor and of commercial credit, coupled with increased uncertainties associated with the new government. Businessmen in the construction industry are restless because their sources of capital have dried up; construction which did much to sustain the economy of Caracas is almost at a standstill.[5]

The price level is perhaps 180 percent of that in the United States; even raw domestic products are higher priced than in the United States. Unemployment appears to have equalled at least 20 percent of the labor force for many years,[6] and some observers would say that unemployment, not to mention underemployment, is growing. Yet farmers and ranchers say there are local labor shortages. There is physical evidence of this. The author left Venezuela in early April when two-thirds of the sugar cane was unharvested, six weeks after the best time for cutting in most areas. Farmers are mechanizing heavily, while hundreds of thousands virtually starve in the cities. National income is about 16.6 billion bolivars ($5.85 billion), amounting to $850 per capita, the highest in Latin America. Few, however, share in this apparent prosperity. In Caracas, two-thirds have annual incomes of less than $660 per capita, half have less than $400, and only 4.5 per cent have incomes in excess of $1,300.[7]

In outline, the economy seems sound enough. In fact, with such low population pressure, with rich, marketable resources, and with relatively free trade environment, the economist is tempted to ask why this should be viewed as a depressed economy and whether there is a development problem at all.

The land area of Venezuela is about the size of Texas and Oklahoma combined. On this is a population of about 7 million, of which perhaps 40 percent receive their chief income from farming—an income which may be 10 percent or so of total national income. Most of the national income (63.0 percent) is from oil and oil accounts for about 95 percent of all export earnings. Most oil income belongs to the government under a provision of the constitution which says that all but surface rights to land belong to the government. Oil income, therefore, may be used for any purpose the government decides. Until mid-1960 the national budget appeared balanced although the new government says the old one left a debt. Income taxes were nominal; real estate taxes were nonexistent. Government receipts from oil provided the revenue that otherwise would have to come from taxes.

For the last few decades there were virtually no exchange controls and little restraint on imports or investment from foreign sources; capital could be freely repatriated, and so on. The bolivar was

[5] Best sources on this include editorials of the *Daily News*, and *El Universal*, 1959 and 1960. Both newspapers are published in Caracas, Venezuela.

[6] Amando Tamayo, *Problems of Land Tenure and the Agrarian Reform in Venezuela*, M. S. Thesis, (Madison, Wisconsin: University of Wisconsin, 1952).

[7] Anonymous, *Study on Milk Consumption in Caracas*, (Caracas, Venezuela: National Institute of Nutrition, March 1953).

freely convertible at a fixed ratio to the dollar (3.35 with minor exceptions). According to Central Bank data, per capita incomes at market prices increased an average of 7.0 percent a year from 1951 to 1958, an unusually high rate of growth. Prices have been fairly level. The author interpreted Central Bank data to show an increase of about 13 percent in wholesale prices from 1948 to 1958 and 5 percent during 1959, a total of only 18 percent. There are little data on current rates of inflation. The author estimated farm cash wages to be up 28.0 percent in the last five years, based on interviews of ranchers.[8]

The Agrarian Reform Act

In appraising what we may expect from this new law it is well to note that the promise of land reform (usually meaning redistribution) has been made by many governments in the history of Venezuela. George Hill points out that this basic appeal made by General Bones in 1819 and later endorsed by General Bolivar brought the necessary support to the revolutionaries to overthrow Spanish rule.[9] Promises of land redistribution have been largely forgotten except in cases where estates have been taken over as a move in direct political retribution. The major step toward land reform has been colonization, but this has been exceedingly slow under previous laws. Research by Schuster and others has shown that from the period 1830 to 1957 a total of only 1,573 families were successfully colonized. Most of these hold small parcels; 966 hold less than 20 hectares.[10] For the last 10 years of that period the National Agrarian Institute has been in operation under an enabling act which permitted many of the same reforms that are sought in the present law.

In the judgment of the author, the major differences between the new law of 1960 and the decree issued by the Military Junto in 1949 is that the new law spells out more completely the provisions for credit, marketing facilities, schools, rural housing, and cooperation. Less specific limitation is placed on conditions under which land can be expropriated or otherwise deemed subject to use under the program and different provisions for finance are set forth, including payment for expropriated land.

Chief provisions of the new agrarian reform act, which appear to establish a 10-point program are:

(1) To distribute land to the landless, as gifts or under a long term land contract at low interest. The land area will be only as large as the occupant can work with hired help, and will vary with the size of the farm. Yearly payments for the land can not exceed 5 percent of the total sales of the farm products.

(2) To give people entitled to benefits of the law the right to denounce the existence of lands which are not fulfilling a social purpose, which lands shall become subject to acquisition or expropriation.

(3) To settle farmers in agrarian centers where the government will construct roads, irrigation systems, and communal services at no cost to farmers: and promote the installation of processing and marketing facilities in agrarian centers.

(4) To organize an agricultural credit system for small and medium producers as well as for rural cooperatives.

[8] Hugh L. Cook, "Government Policies on Pricing and Marketing for the Dairy Industry in Venezuela (With Implications for General Growth of the Economy)," Consejo de Bienestar Rural, Caracas, Venezuela, March 1960.

[9] George W. Hill, Gregorio Beltran and Christina Marino, "Social Welfare and Tenure Problems in the Agrarian Reform Program of Venezuela," *Land Tenure, Proceedings of the Land Tenure Conference, Madison, Wisconsin, 1951* (Madison, Wisconsin: University of Wisconsin Press, 1956).

[10] Jorge F. Schuster, *et al*, "La Colonizacion Agraria en Venezuela, 1830–1957," Ministerio de Agricultura y Cria, Caracas, 1959.

(5) To promote, operate and control services of storage, transportation and distribution of national farm products in national and international markets, "without interfering with private initiative." To guarantee minimum prices of farm products, cattle and fish. To give protection and credit to industries which use basic materials produced by small and medium farmers, especially in those cases where the industry offers credit and technical assistance to farmers.

(6) To transform and improve rural housing conditions. To require that landowners will have to provide permanent housing for their workers on large farms.

(7) To encourage the creation of rural cooperatives of all types.

(8) To institute a system of progressive taxes on idle or "indirectly cultivated land" (involving tenants, contractors, middlemen or squatters).

(9) To expropriate land for use in the program, under certain sets of conditions.

(10) To create an internal public debt contracted by the National Agrarian Institute and guaranteed by the government. To that effect, the government will issue bonds of the "Agrarian Debt" in order to pay for expropriated land, to make purchases and to finance any possible investments of the National Agrarian Institute.

For whom is the agrarian reform aimed? The report of La Subcomision Legal discussed the needs of squatters, share tenants and farm laborers. It also referred to credit, transportation and marketing needs of small owners, who appear from these descriptions to be almost as depressed economically as the former three groups. It therefore may be assumed that the agrarian reform is aimed at the needs of all these groups, and also the needs of the landless in general who may not be on farms. It would appear that each of these groups should have a program aimed at its specific needs. Tenants (sharecroppers), the group for which land reform schemes have usually been written in the Orient and Middle East, are only a small percent of the the total population in Venezuela. If the program is aimed more directly at the needs of tenants than any other group, then for that group it is incomplete in important respects.

It will be noted that the law does not mention equitable division of produce as between landlord and tenant, nor does it provide new legal machinery for dealing with landlord-tenant disputes over tenure, both of which are part of the land reform problem. No provisions deal with the problem of extreme fractionization of holdings, unless "cooperation" is expected to deal with this. Nor is there anything specifically for farm labor, except the provision on housing. Even though the law does not overtly take the form of widespread redistribution of large landed estates, its principal appeal is essentially in terms of "land for the landless" or "land to the tiller." The program leans heavily on colonization.

Some Tenure and Productivity Data

Tenure conditions for farmers are suggested by the following data from the Census of 1950. Tenure classification showed that, of 248,738 farmers, 41.3 percent were owners; 35.8 percent were squatters; 10.3 percent were renters; 6.3 percent were sharecroppers, and the balance were mixed. Probably one-third of the farm population are laborers.

There is both an extreme concentration of holdings and an extremely large proportion of small farms (Table I). Four-fifths of the land in farms is in holdings of 1,000 hectares or over, comprising only about 1.5 percent of the holdings. On the other hand, slightly over 1.0 percent of the land is in farms of less than 5 hectares, comprising 51.0 percent of the holdings.

Productivity in agriculture is low by almost any standard of measurement,

whether per hectare, per man hour, by the proportion of the population in agriculture, or other. The only products of which there is an exportable surplus are coffee and cacao. The country is almost self-sufficient in tobacco, sugar, corn for food, potatoes, beef and a few minor crops. Beef is the only perishable farm product in which there is almost self-sufficiency, although quality is quite low. The manager of the largest ranching concern in the country told the author that his premium grass-finished beef would grade as United States good. It should be added that the supply of milk for fluid use at current prices is all the market will absorb. Presumably, agricultural output could be expanded considerably if all imports were cut off. However, if average domestic farm prices are any indication, costs of production are high relative to world prices of almost every item. For example, farm prices for fluid milk near Caracas are about $10.00 per hundredweight plus a production subsidy of about $2.50. This figure is nearly twice the Class I price at Miami, and an even greater multiple of European prices. Some local observers express the opinion that the high costs of production are partly explainable by the high costs of management, along with low productivity in general.

TABLE I—DISTRIBUTION OF LAND HOLDINGS, BY SIZE, VENEZUELA: 1950

Size Classification (*hectares*)	Holdings		Area in Hectares	
	Number	Percentage	Number	Percentage
All holdings	248,738	100.00	22,774,585	100.00
Under 1 hectare	18,231	7.33	7,270	0.03
1 through 4	109,179	43.90	255,650	1.12
5 through 9	41,261	16.59	271,463	1.20
10 through 19	26,949	10.84	352,086	1.55
20 through 49	18,470	7.43	539,005	2.37
50 through 99	6,905	2.77	457,282	2.01
100 through 199	4,142	1.66	532,042	2.34
200 through 499	3,469	1.39	1,007,080	4.43
500 through 999	1,846	0.74	1,210,961	5.32
1,000 through 2,499	1,644	0.66	2,399,434	10.55
2,500 and over	1,821	0.73	15,557,871	68.40
No information	14,821	5.96	154,440	0.68

Source: Amando Tamayo, *Problems of Land Tenure and the Agrarian Reform in Venezuela,* M. S. Thesis, Madison, University of Wisconsin, Table 5, p. 56, 1952.

What May Be Expected from the Agrarian Reform Law?

Some Promising Effects. Perhaps the most that should be expected from the law is that it may tend to arrest the movement of people out of agriculture until such time as those who are presently unemployed and hovering around cities and villages can be absorbed into non-farm employment. So far the law appears to have political appeal and the hope of improvement it holds to the masses (and to important urban elements who fear their disturbances) may add to the stability of government while other measures are being taken. Certainly, the law can be expected to exert pressure on landlords to treat tenants and laborers with more consideration, lest they petition the government for expropriation. The legislation may be an important step to establish the concept of the family farm as a potentially workable and productive unit in particular segments of Venezuelan agriculture. It may pressure toward better housing for tenants and farm laborers. Certainly the promise of more credit by rural banks, especially to small farmers, is good. This promise, of course, has been made before with the chief result being a government lending agency that ultimately makes all its loans to large commercial farmers producing customary products.[11] Needs for super-

[11] See George W. Hill, Jose A., Silva M. and Ruth Oliver Hill, "La Vida Rural En Venezuela," *Revista de Sanidad y Asistencia Social,* Ministerio de Sanidad y Asistencia Social, Caracas, Enero–Abril de 1959.

vised credit to small farmers could be a separate paper.

The nature of markets and the possible effect of government participation in the marketing process as promised here, would require even more space for analysis. The government now has heavy investments in warehouses, and in processing plants of various kinds; and it directly participates in pricing in several ways. At least 10 percent of the 4.9 billion bolivars which the government has invested in "productive" enterprises is in sugar centrals, refrigerated warehouses, public markets, and so on.[12] Perhaps the key question is whether these activities will benefit those for whom the land reforms are intended any more than they have in the past. No specific changes are promised in the legislation.

The plans for colonization are good, though results may be slow. Colonization on any large scale is beset with many problems, not the least of which is finding sufficiently large areas which are suitable. The cases of successful colonization by government are few in recent history.

An example of successful colonization is to be found in the recent history of Mexico. Beginning with 1936 approximately 30,000 peasants were resettled on expropriated lands in La Laguna, Mexico.[13] By and large, this colonization was successful, according to Senior; but the several important elements which he carefully analyzes would be present only in part for any such attempt in Venezuela. Senior applies sociological concepts to three major issues of land reform: (1) how are those who want the reform going to secure the power to carry it into effect, (2) how is democracy going to be achieved during and after the land reform, and (3) what kinds of technical problems must be solved.

Many interesting contrasts could be drawn not only between what Senior found in his analysis of the Laguna experiment and the colonizations in Venezuela but also between what he found in Mexico and virtually any area in Venezuela that could be chosen for colonization. Although the sociological and political problems could be discussed at length, it seems sufficient to point out that no such land area as La Laguna could be found in Venezuela. La Laguna included about 149,000 hectares of irrigable cotton land, with many facilities for growing and ginning, and also roads and communications previously developed by foreign corporations over a period of decades. At the time the expropriations were decreed, the government made arrangements for work to start on a dam to irrigate 110,000 hectares. The dam was in use less than 10 years later, and 1,060 wells were in operation within four years of expropriation.

Some Precautionary Views. Some features of this legislation, however, would seem to call for careful study and unusually judicious administration, lest their effect be more to decrease productivity and to upset stability than to improve them. For example, the subdivision of public lands may be good if, (a) these lands are not being productively worked at present, (b) if the subdivision is into units of a proper size to use other resources productively, depending on the type of enterprise and so on, and (c) in those instances where these lands now constitute an important source of income to states and municipalities, if other sources of income to local units such as real estate taxes are devel-

[12] Milo Perkins, "Informe Sobre Le Economia Venezolana," Ministerio de Formento, 1958.

[13] Clarence Senior, *Land Reform and Democracy* (Gainesville: University of Florida Press, 1958).

oped to furnish public revenues to these political units for schools, roads, etc. Precaution may be in order lest these real estate taxes become too great a burden for the homesteader. Homesteads of a certain size could be tax-exempt, for example. Opinions differ on whether rental of such lands is a significant source of revenue to local political units in Venezuela, where most revenues come from federal sources. In any case, land tax policy must be a consideration in land reform.

The threat of subdivision of existing farms at the present time seems to act as a damper to investment and therefore to increasing productivity. Conditions for expropriation are not especially severe but are subject to broad interpretation. According to the observation of the author, the most disturbing feature to farmers and ranchers has been that most of the land could be interpreted as falling already within the public domain and subject to use in this program if the administrators of the law so desired.

Perhaps there is nothing unusual about the land title problem compared with many other underdeveloped countries; namely, that most of the land including the commercial farms and ranches have never been surveyed nor has title been issued to the owner. The agrarian reform law permits use of any lands that belong to the government. Farmers do not know how they would stand legally in the event the government claims the land. These fears are supported by reports that squatters began to move onto commercial producing units as soon as the law had passed and that several months later the government had taken no action to inquire into the matter. Commercial landholders are further disturbed by the fact that tenants and presumably laborers may petition for expropriation of lands which are not being worked productively. What criteria will they use?

Some observers may argue that the large landowners make little investment in any case and that their incentive to invest may be ignored. The author is confident that the large landowners had been investing in their farms up to mid-1960, at least in the commercial cattle industry north and west of the Illanos. The author has seen physical evidence of this on a substantial number of the largest ranches. Statistical proof is difficult. The Director of the Agricultural Bank at Valera, center of commercial production in the State of Trujillo was asked by the author to draw a random sample of 10 percent of his loans to ranchers that have received productive loans for five years or more and furnish him with appraisals of the investment five years ago and also the productive loans to date. From these records, productive loans equal 26 percent of the value of the land, equipment and cattle. Presumably, these loans were for fixed investment. There is no record of how much was invested directly from current earnings. To avoid this uncertainty, it would appear that the federal government could issue a much firmer policy statement describing the conditions under which land would be viewed as government lands.

If action under the program is to take place soon, most of the redistribution, including colonization, must be on lands now in use. Most of the good croplands and grazing lands as well are already in use. More could be brought in by expensive and time-consuming watershed development projects, or by charting and developing the unknown jungles to the southeast. More investment, improved technology and practices and better man-

agement are, of course, needed on every hand. Will redistribution of ownership of lands now in use improve the latter?

Rainer Schickele has pointed out that where landlords actively contribute to the production process by furnishing equipment, seed, fertilizer, livestock, etc., and by giving managerial guidance, merely the transfer of ownership to the tenants or farm laborers is likely to reduce the production.[14] Certainly this would be true in most of the commercial cattle (beef-dairy) industry in Venezuela. Anywhere in the country 25 percent of the herds will include 75 percent of the cattle; or 25 percent of the landholdings will include at least 75 percent of the land. These holdings are worked almost entirely by laborers and, although managers are hired, the landlord usually visits the farm from two to five days per week and participates actively in decisions. These large units are adopting new technology at reasonable rates. In fact, the major respect in which they are noticeably lagging is in making hay or silage during the rainy season for use during the three months' dry season.[15] There is nowhere available statistics on type of farm by tenure classification. The recent agricultural atlas contains some of this but not enough to judge the relationship between landholder and tenant.[16]

According to Tamayo, the landlord furnishes land, seed, tools, other capital such as costs of water for irrigation, transportation of sugar cane to the mill, and costs of processing in the sugar industry. The landlord likewise furnishes capital in wheat-growing.[17] Very likely he makes most managerial decisions. In coffee production the landlord furnishes the land and perhaps the processing facilities.

The problem of holdings being too small for efficient production is already a major one and may be further aggravated by subdivision of commercial farms. Lorne Sonley has referred to tobacco as "the only agricultural commodity produced in Venezuela with even a modicum of technical and economic efficiency."[18] Tobacco farming is the only one in which a high degree of integration exists between the farm and the processing industry. Most of the cigarettes are manufactured by two American and one British firm. These cigarette firms supply technical information as to soils that are best suited for cigarette tobaccos, types of seed, fertilizers, harvesting methods, curing, and so on. Apparently they are able to force the growers to follow their advice by simply refusing to take the tobacco grown under any other set of conditions. Most of the tobacco farms range around 50-100 hectares and it is doubtful if necessary technical advice and financial arrangements to get efficient production would be furnished through commercial integration if tobacco farms were much smaller. Of course, it is at least possible that government-sponsored cooperatives could achieve the necessary integration on small units, following the model of what is being done in Egypt.

Unique Features Summarized

Certain unique features of the Venezuelan economy may affect what land re-

[14] Rainer Schickele (Chairman of Working Party), "Land Reform and Agricultural Production," *Land Tenure, op. cit.*, pp. 575–582.

[15] Hugh L. Cook, "Government Policies on Pricing and Marketing for the Dairy Industry in Venezuela," *op. cit.*

[16] Anonymous, "Atlas Agricola de Venezuela," Direccion de Planification Agropecuaria, Ministerio de Agricultura y Cria, Caracas, 1960.

[17] Amando Tamayo, *op. cit.*

[18] Lorne T. Sonley, "Ruminations on 'Contract Farming' and Its Economic Potential in Venezuela," 10th Annual Conference of the Venezuela Association for the Advancement of Science, Caracas, March 1960.

distribution can do toward economic development. In outline these may be summed up as follows:

(1) The country is not dependent on agriculture to earn exchange, to build up savings, or even to feed the population in the same sense that most of the presently developed countries were at some historical stage. Instead, the rich oil resources for which there is a ready market belong to the government and may be used for economic development. Development in agricultural and in rural areas is not unimportant, but the source of political power and the origins of economic growth are far less rooted in agriculture than they were in feudalistic economies of Europe at one time, and less than they are today in many underdeveloped countries in Asia, Africa and Latin America.

(2) Most of the agricultural land in the part of the country (about one-half) that has undergone any economic development whatever is now in use by cattlemen or farmers. The balance of the land is unexplored jungles and unknown areas not even included in censuses. This means no roads, air lines, communications of any kind, and literally no vestiges of civilization, such as army outposts, etc.

(3) Because of the low rainfall and the nature of the soil, most of the agricultural land is best suited for highly extensive enterprises, with the present "state of the arts." This means that, unless vast expenditures are made for irrigation, most of the land must be used in large tracts.

(4) Without reference to ownership rights, a vast portion of the agricultural lands are grazed, being devoted chiefly to a beef-dairy dual enterprise or, in the most primitive areas, to beef only. Most of these enterprises are completely self contained, with roads, water, power, transport of products to market, or processing of products being entirely the responsibility of the entrepreneur. In short, in vast areas no social overhead investment has been made.

(5) Vast tracts of rice and sugar lands belonging to one owner are seldom found in Venezuela, as they are in the Philippines for example. The same comparison could be made to coffee lands of Brazil, the rice lands of Burma and Thailand, and copra plantations of Indonesia, the sugar lands of Cuba, or the cattle ranches on the pampas of Argentina. Intensive farming of a kind that would support a large number of small family farmers is a relatively small part of Venezuelan agriculture.

(6) The absentee landlord who makes little or no investment in his land of the earnings from the land, is much less evident in the best agricultural and ranching regions of Venezuela than in many underdeveloped countries of the world. Outside of the so-called central and western regions of the country, however, the absentee landlord does little to adopt technology or to make advances of any kind.

All this, of course, is a matter of degree. There are a few large ranches (8 or 10 thousand hectares in size) that could be managed with much greater efficiency—that could be broken into a dozen or so smaller economic sized ranches, or even irrigated and subdivided into hundreds of small intensive farms. There are some tobacco, wheat, corn, potato, sugar, coffee, and other lands that presently have enough water, either from rainfall or other sources, where the management ability of the tenants and other considerations are such that redistribution of ownership would result in increased productivity, or where redistribution would be propitious in other respects. These are small in land area and their selection for redistribution would have to be done judiciously to accomplish worth-while objectives. And, of course, with large-scale public programs much more land could eventually be made suitable for redistribution as productive units. The question raised here is whether much can be accomplished toward absorbing into agriculture the army of unemployed and others presently outside the market economy and thus contributing to economic development by relying heavily on the redistribution fea-

tures of the new law, with the present state of affairs.

Where Should the Emphasis Be in Economic Development

This paper has been concerned with the potentialities and limitations of the Agrarian Reform Law and has not been directed at how to go about the task of economic development. To say much on that subject would require a separate study of numerous important sectors of the economy. Such a study was recently made by the International Bank for Reconstruction and Development. Here two points may be made in passing. (1) The argument of Lorne Sonley, former adviser to the Ministries of Agriculture and of Development, is worth considering. He argued that those unemployed could be productively absorbed into industry with no greater investment than would be required to absorb a like number in agriculture and that the cost of educating them for useful work and providing other social overhead capital would be actually less in urban areas. Milo Perkins estimated that 46,000 bolivars per worker is now invested in industry.[19] The Economic Subcommission of the Agrarian Reform study group estimated that 40,000 bolivars per family would be required to settle landless farmers in agriculture on a subsistence basis. Social overhead investment is not included in either estimate, although the latter includes access roads.[20] (2) More attention is needed to be given to labor policy. Part of the explanation of why farmers should mechanize heavily while large-scale unemployment exists may lie in the activities of labor unions. These demand minimum wages and fringe benefits which appear to be at least as great as would be found in a fully employed economy where the labor supply is largely skilled and highly literate. The requirements of Venezuelan law which apply to petroleum and mining industries as to wages and fringe benefits are much higher than for those industries in the United States.[21]

Local observers say that these inducements for labor originally were furnished voluntarily by oil and mining companies to attract skilled foreign labor and to develop a local labor supply. Later, such provisions were embodied into law. Stipulations that 75 percent (now 80 percent) of labor in all categories of skill must be domestic were written in, and labor unions and some political elements began to use this as a model for all industries, including farm and ranch. Perhaps oil and mining can afford this because they have relatively good markets and by now enough of the labor supply is skilled. Only 5 percent of the labor force is in oil and mining and meanwhile for many other industries including agriculture the labor supply is not sufficiently skilled to be worth such wages when the entrepreneur has the choice to mechanize. Some owners give as a reason for mechanization the shortage of managerial skills, e.g., with milking machines a manager has only one-fourth as many unskilled laborers to supervise. Less than a half-dozen ranches are unionized so far but the pressures for unionization are increasing. An important question is whether these tactics are best for labor and for the economy at this stage. There is no question that

[19] Milo Perkins, previously cited.
[20] By letter from Jorge Schuster, July 4, 1960.

[21] For the provisions see Lewis Hanke, "Labor Laws in Venezuela," Reading No. 28, *Mexico and the Caribbean* (Princeton, New Jersey: D. Van Nostrand Co., 1959).

laborers need more rights before the law and require primary attention as a public problem.

It should be recognized that the pressures for unionization tend to work in the same direction as the provisions of the land reform law which permit laborers and tenants to petition for expropriation. That is to say, the landlords may respond by taking measures to keep the laborers in a mood to resist unionization. If for this purpose the landlords move to develop rural education (especially of farm labor), better housing, food, medical attention and so on, then these pressures will have contributed to rural development.

Evidences of Vigor

On the optimistic side, with vigorous administration and adequate appropriations the new agrarian reform law can do much to arrest the movement of people out of agriculture until the army of the unemployed can be absorbed elsewhere. Features of the law other than redistribution of larger holdings deserve major emphasis.

There is evidence that more attention is being given to administration and appropriations than in any previous attempt at land reform. The recommendations of the Schuster report deal almost entirely with problems of coordinating the work of government agencies and otherwise improving administration, especially the problem of delegating authority, establishing accounting controls, tenure of personnel, and getting colonists on a self-sufficient basis so far as the National Agrarian Institute is concerned.[22]

In addition to the Schuster study, other agrarian reform study groups furnished reports on legal and economic problems during the period 1958–1960.[23] Since the passage of the new law the appropriation for the National Agrarian Institute and for all of agriculture has been greatly stepped up. The budget for the next four years as developed by the Central Planning Office (Cordiplan) sets forth a total expenditure of 2,540.7 million bolivars for development of the agricultural sector of the economy.[24] (This does not include administration costs and others indirectly related to agriculture, such as basic education, electrification, major "infra-structure" public works, health, etc.) Of the 2,540.7 million bolivars, 930 million are designated for settlement of landless peasants. (The total appropriation for resettlement during the eight years 1949–50 through 1956–57 was only 244.8 million bolivars.) Of the 806 million included in the grand total for agricultural credit, a considerable amount will be for establishment of newly created farms.

It also is significant that, of the annual total budget of 5,400 million bolivars, 10 percent is designated for direct expenditures in agriculture, compared with around 5 percent in earlier years.

New vigor also is suggested by data on provisional titles issued during recent months. During the months of April, May and June 1960, a total of 6,606 such titles were issued by the National Agrarian Institute, which was considerably higher than the number issued during the previous two-year period. In most of these instances the farmers received only provisional title and no other kind of technical or financial assistance. This occurs chiefly where a group of landless farmers petition for subdivision of some

[22] Jorge F. Schuster, *op. cit.*

[23] Anonymous, *Reforma Agraria, Actas de La Subcomision Legal,* Vol. I, Tamo I y II, Caracas, Venezuela: Ministerio de Agricultura y Cria, 1959).

[24] By letter from Jorge Schuster dated July 4, 1960.

public land on which they are squatting. Ultimately it is expected that each farmer will be furnished a crude shed for living and storage, a road to the main highway, and one cow. Land (10 hectares or less), clearing, subdivision costs, house, roads, and cow are variously estimated to cost 12,000 to 40,000 bolivars per family. Credit, irrigation, drainage and administration will increase this estimate. Since the latest estimate places the number of families to be resettled at 350,000, the total cost will be somewhere between 4.2 billion and 14.0 billion bolivars for a 10-year program. Even if the higher of these estimates proves to be nearer to the actual cost, it is certainly not an unreasonable proportion of the national income to be spent on the program. The 350,000 families, however, may be no more than half of those that are presently outside the market economy. Agrarian reform is more likely to contribute to development if what it can be reasonably expected to achieve is kept in perspective.

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Cost-Push of Urban Growth†

By HENRY B. SCHECHTER*

OVER the past few years attention has been lavished upon whether the 1955–57 price inflation preceding the 1957–58 business recession was a cost-push or demand-pull inflation. There has also been concern because the United States' rate of economic growth was below the long-term average in 1953–57.[1] In the context of these broad economic questions little attention has been devoted to changes in our urban development pattern which may be introducing long-range cost increases into the economy and adversely affecting its growth. There are indications that changes in the pattern of land development for urban uses have led to increased real costs of providing necessary everyday services and of performing necessary everyday functions. These increased costs may take the form of undue increases in capital outlays or involuntary increases in consumption of goods and services. Some of these effects are discernible in per-unit price increases (or less than technologically feasible cost and price reductions) and some are discernible in increased expenditures for necessary daily functions.

The purpose here is to review the findings of change in the pattern of urban growth, examine the nature and general magnitude of increased economic costs as related to the changed pattern of urban growth and note the possible effects with regard to inflation and economic growth.

I. The Secular Change

A basic change in the locational structure of the United States economy in recent years has been the "ribbon development" of land for urban uses. Such development has been under way longest and most intensively with respect to nonfarm residential development. The resultant general outward extension of residential areas from central cities can be traced in Bogue's study of population increases in metropolitan areas. He showed the decennial population increases in the central cities and in their urban and rural rings in 162 standard metropolitan areas, so defined that the land area for each metropolitan area is held constant.

During the first three decades of this century the greatest relative increases in population occurred in the close-in urban rings surrounding the central cities of the standard metropolitan areas. There were also substantial rates of increase in the central cities. Although the over-all population increase was relatively small during the thirties, the pattern of relative growth did change. The greatest relative increases in population occurred in the rural rings of the metropolitan areas, further removed from the central cities than the urban rings. The new growth pattern became more pronounced during the forties. The rural rings around cen-

† The author acknowledges the helpful comments of colleagues, Dave Lowery and William Herman, on an earlier draft of this article. Views expressed herein are those of the author and not necessarily those of the Housing and Home Finance Agency.

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[1] United States Department of Commerce, Office of Business Economics, "Gross National Product, National Income and Personal Income, 1929–58," *Survey of Current Business*, July 1959, p. 7, annual gross national product estimates in constant dollars. The average annual growth rate was 2.66 percent for the period 1953 through 1957. The comparable annual growth rate averaged about 3 percent from 1909 through 1957. See United States Department of Commerce, *U.S. Income and Output* (Washington, D.C., 1958), p. 2.

tral cities of standard metropolitan areas had a 41-percent population increase, the urban rings a 29-percent increase and the central cities only a 14-percent increase.[2]

This pattern assumed dimensions giving rise to the term "metropolitan explosion" in the current decade. Census figures for all 166 standard metropolitan areas as defined in the 1950 census show that, from 1950 to 1959, in standard metropolitan areas the rural areas outside the central cities had an 85-percent increase in population (117 percent for the rural nonfarm areas). The urban areas outside of the central cities had a 25-percent increase and the central cities only a 1.5-percent increase.[3]

The extensive residential development of metropolitan areas was at times a cause, at times an effect of roadbuilding into suburban and rural parts of those areas. Extensive roadbuilding makes possible the leapfrogging and ribbon development of land. Builders seek the cheaper, further-out land for subdivisions. Generally, only the land which is relatively accessible to the highways is sought so that residential development is strung out along the main highways.[4]

More recent than the residential deconcentration has been a trend toward industrial deconcentration. As Hoover and Vernon pointed out with respect to the New York metropolitan region: "The recent trend has clearly been in the direction of a less centralized pattern of employment . . . it is likely that more and more of the lower-income residents of Manhattan and other core areas will find employment further out. There is already, for example, such heavy reverse commuting from upper Manhattan as to approximately balance the flow of traffic across the George Washington Bridge."[5] The same authors point out that most of the "reverse commuting is effected mainly by automobile (including car pools), largely because of the inadequacy of public transport to the diverse points of employment."[6]

The reasons for diverse industrial locations were analyzed in a Detroit regional study. It was concluded that the pattern of industrial location in the Detroit region followed from the past leapfrogging effect of urban residential growth. The leapfrogging development had resulted in disconnected areas and a plant requiring a large site has to be located at the outer edge of the urban areas where large vacant land sites remain.[7] As a consequence of such patterns of development, industrial workers (and

[2] D. J. Bogue, *Population Growth in Standard Metropolitan Areas* (Washington, D.C., 1957), Housing and Home Finance Agency, pp. 12–13.

[3] United States Department of Commerce, Bureau of the Census, Current Population Reports, *Civilian Population of the United States by Type of Residence, April 1959 and 1950*, Series P-20, No. 98, January 25, 1960, p. 1.

[4] E. M. Hoover and R. Vernon, *Anatomy of a Metropolis* (Cambridge, Massachusetts: Harvard University Press, 1959). Based on their New York region study, Hoover and Vernon think that this has been changing recently. They said (p. 190): "The population map has always shown a good many finger-like extensions of the built-up area along transport routes, dribbling out into bead strings. . . . But in recent years the pattern of growth has been quite different. The extensions have not grown much longer, but they have broadened, blurred and developed many small off-shoots. The spaces between have become peppered with scattered development." The spaces between the ribbon extensions are still the predominant feature of the land use maps of recent years published by area planning commissions for many metropolitan areas such as Atlanta, Washington, Toledo and Denver. Furthermore, the small offshoots cited by Hoover and Vernon represent small subdivisions which generally would make for the diseconomies of scale discussed later in this paper.

[5] *Ibid.*, p. 212.

[6] *Ibid.*, p. 214.

[7] Detroit Metropolitan Area Regional Planning Commission, *Features of Industrial Location in the Detroit Region* (Detroit, Michigan: August 1958), p. 8.

domestics) increasingly commute "out," while the white-collar workers who located in the residential suburbs commute "in."

A notable departure from the radial extension of industrial development was the Route 128 circumferential highway development in the Boston region. This horseshoe-shaped highway around the landlocked sides of Boston bisects many of the radial highways shooting out of Boston in all directions and passes near many of the bedroom communities on the radials. Therefore, as industry locates extensively along the circumferential highway the needs for transportation presumably should be reduced. The dispersion of plants and residential communities is great enough, however, that "just about all of the thousands whose jobs take them to the fringes of the circumferential road travel in their own vehicles or in car pools."[8] In fact so much auto traffic is being generated that some sections of Route 128 built eight years ago are being widened from 4 to 8 lanes.

II. The Increased Economic Costs

It has been observed that the uncoordinated development of land to accommodate our urban growth has resulted in increased costs for persons and activities in urban areas.[9] Available data permit some examination of the nature and magnitude of the cost increases in certain essential economic activities. In some instances the utilization of more resources, such as more gasoline used in longer journeys to work, may be reflected in the national income data as increased consumption expenditures. However, since it represents an involuntary increase in consumption for a necessary everyday function, it constitutes an increased economic cost for that function. Such cost increases are inflationary not because of higher wages or product prices, but because of inefficiencies introduced by our plant layout for modern living.

The following discussion utilizes available microeconomic data which illustrate the increase in costs of various services related to the pattern of urban developments, and macroeconomic data which can indicate roughly the magnitude of the aggregate added cost with regard to each type of service involved. Data used to indicate aggregate additional cost are for the period between 1953 and 1957, the last complete business cycle period for which detailed annual national income data are available and one in which the average annual increase in real GNP was less than 2.7 percent.[10]

1. Local Travel. In the case of local travel a cost index which only measures changes in per-unit (mile) costs does not provide a measure of real cost changes due to increases in length of local travel occasioned by the changed pattern of urban growth. An illustration of such increased local travel is provided by data in a study of travel in the Washington, D. C. metropolitan area in 1948 and 1955 by Jacob Silver. Between these two

[8] A. S. Plotkin, "Transportation Facilities on Route 128," *Greater Boston Business Magazine,* Route 128 Supplement, 1959, pp. 6–7, 54–55.

[9] As described by Ratcliff: "The outward thrust of our urban areas is characterized by scatter and dispersion of land development activities throughout the periphery. . . . This uncoordinated process of land development imposes added costs on the homeowner which could be avoided if land development were orderly and compact. The dispersed pattern of peripheral settlement and its unplanned arrangement adds travel and time costs for all persons and activities which move about its area." R. U. Ratcliff, "The Provision of Adequate Building Sites in the Sixties," *Study of Mortgage Credit* (Washington, D.C.: United States Senate Banking and Currency Committee, 1958), pp. 164–169.

[10] United States Department of Commerce, Office of Business Economics, *loc. cit.*

years the total population in the area increased by 31 percent and the total number of dwelling units by 44 percent. The total number of average weekly intra-area work, shopping and other trips by people in autos, taxis, or mass transit vehicles, increased by 42 percent, about the same as the number of dwelling units. However, the estimated aggregate mileage represented by the total average number of weekly intra-area trips increased by 71 percent.[11] The total mileage for the average number of weekly intra-area shopping trips showed a 107-percent increase, for work trips a 49-percent increase, and for other intra-area trips a 73-percent increase.[12] The greatest increases in intra-area travel trips have been in trips made by automobile, with some increase in taxi trips and a sharp decline in mass-transit passenger trips.[13]

For the country as a whole, expenditures for user-operated transportation increased by $6,746 million, or 26 percent from 1953 to 1957.[14] Over the same period the index of private transportation costs, reflecting most of the costs of user-operated transportation (new and used autos, tires, repairs, gasoline, oil and insurance) increased by only 3 percent.[15] Thus, about 23 percent of the expenditure increase represented the increased use of products and services for travel via user-operated transportation. If a further adjustment is made for a 7.9 percent increase in population,[16] the adjusted increase in expenditures for user-operated transportation is about 15 percent or $3,950 million (in 1953 dollars) between 1953 and 1957.

The adjustment of expenditures for population increase in accordance with total population increase probably overcorrects for the increase in auto travel expenditures attributable to population increase. The greatest part of the population increase has been in the under-14 age group which probably engenders relatively less travel than the rest of the population. The over-correction for population increase, therefore, probably more than compensates for the increase in auto expenditures in four years that is attributable to better quality cars and gasoline or to increased auto travel for voluntary pleasure trips, which generally account for a minor proportion of all auto travel.

In mass transit riding, there has been a general decline in urban areas in the United States. From 1945 to 1956 the number of revenue passengers carried on transit lines declined from 18,982 million to 8,756 million.[17] The straight line elongation of distances along highways

[11] J. Silver, "Trends in Travel to Central Business District by Residents of Washington, D.C. Metropolitan Area, 1948 and 1955," *Public Roads*, April 1959, pp. 153–176. Aggregate mileage was estimated by multiplying the number of trips shown by Silver in two-mile class intervals by the median distance for each class interval.

[12] The "other" intra-area trips probably are frequently made to attend movies, P.T.A. meetings, childrens' dance classes, church, etc. The ribbon development of successive residential subdivisions could be causing such trips to be longer than when residential development took a more concentric shape around central nonresidential community facilities.

[13] Ratios of numbers of 1955 to 1948 trips were 1.40 for automobile driver and also for automobile passenger trips, 1.07 for taxi passenger trips and .76 for mass transit passenger trips. J. Silver, *op. cit.*, p. 163.

[14] United States Department of Commerce, *Survey of Current Business, op. cit.*, p. 17 for 1953–55 data; and, under the same authorship, *U.S. Income and Output*, 1958, p. 150 for 1956–57 data.

[15] United States Department of Labor, Bureau of Labor Statistics, *Consumer Price Index—Price Indexes for Selected Items and Groups*, Washington, D.C., September 1959, p. 9.

[16] United States Department of Commerce, Bureau of the Census, Population Estimates, *Estimates of Population of the United States and Components of Population Change, January 1, 1950 to September 1, 1959*, Series P-25, No. 206, October 26, 1959, Washington, D.C., p. 4.

[17] American Transit Association, *Transit Fact Book*, 1957 edition (New York: 1957), p. 8.

between major urban centers and places of residence has caused a vicious cycle of increased mass transit costs and fares and declining passenger revenue. The average cash cost to the consumer per unit mass transit ride in the ten largest cities in Ohio, for example, increased from 9.2 cents in 1948 to 19.0 cents in 1957.[18]

In addition to longer distances the higher mass transit costs are caused by the increasing ratio of peak to average service as mass transit has declined. There has been less of a decline in journey-to-work trips during rush hours than in shopping and other trips. Consequently, with manpower and equipment requirements to handle peak loads, there is a higher proportion of operating time when labor and equipment are not fully utilized than in the past, and this increases costs per unit ride furnished.[19] Capital-product ratios developed by Ulmer indicate that the declining efficiency in local bus line transit commenced after World War II. The ratio of capital to output, both measured in constant dollars, which had been declining, began to increase in 1947 through 1950, the last year covered by Ulmer's data.[20]

These developments were reflected in a 21.3 percent increase in transit fare rates in the country between 1953 and 1957, while the total consumer price index increased only 5.1 percent.[21] A similar course of events occurred with respect to railroad commutation, reflected in an 18 percent increase in the index of railroad coach fares.[22]

Factors in the change in aggregate consumer expenditures for purchased local transportation (about 62 percent local transit, 32 percent in taxis, and 6 percent railway commutation) have been: a large decrease in passenger use of local transit; increased costs mirrored in the increased indexes of fares regulated by public utility commissions; and some lengthening of the average trip. Primarily because of a decrease in local mass transit outlays, consumer expenditures for purchased local transportation declined by $817 million, from $2,106 million in 1953 to $1,289 million in 1957,[23] despite an increase of about 20 percent in the local public transit and railway (including commutation) fares.[24] The 1957 expenditures would have been about $215 million less than $1,289 million if the price increases had not occurred. Assuming that price increases equal to about one-fourth of the latter amount would have been necessary, in view of the 1953–57 increase of 5 percent in the over-all consumer price index, the balance, or $160 million of 1957 expenditures for purchased local transportation might be related to special factors of cost increase. The latter would include inefficiencies resulting from declines in use of equipment and attendant labor below optimum levels and lengthened trips, both

[18] Ohio Legislative Service Commission, "Mass Transportation in Ohio," *Selected Metropolitan Area Problems*, Staff Research Report No. 34, Columbus, Ohio, February 1959, p. 30.

[19] *Ibid.*, p. 27.

[20] M. J. Ulmer, *Capital in Transportation, Communications, and Public Utilities: Its Formation and Financing* (Princeton, New Jersey: 1960), p. 494, for capital-product ratios of bus line transit companies. Ulmer points out (pp. 100–101) that the postwar rise in the local bus transit capital-product ratio followed in part from the extension of services to new suburban areas. He expects a decline in this ratio sometime in the period after that covered by his study (through 1950), on the basis of less extensive and more intensive growth of suburban areas. There is no indication as yet, however, of a significant change in the extensive growth pattern.

[21] United States Department of Labor, Bureau of Labor Statistics, *op. cit.*, pp. 1, 9.

[22] *Ibid.*, p. 9. Index numbers of coach fares were adjusted for a 1954 decrease of federal excise taxes, from 20 percent to 10 percent.

[23] United States Department of Commerce, *Survey of Current Business*, *op. cit.*, p. 17 for 1953–55 data; and, under the same authorship, *U.S. Income and Output*, Washington, 1958, p. 150 for 1956–57 data.

[24] United States Department of Labor, Bureau of Labor Statistics, *op. cit.*, p. 9.

related to the pattern of land development.

If the ($160 million) estimated amount of 1957 local purchased transportation expenditures attributable to the special cost factors is adjusted for the 1953–57 fare increase of 20 percent, it represents roughly $133 million in 1953 transportation dollars. When the $133 million is added to the previously estimated 1953–57 increase of $3,950 million in expenditures for user-operated transportation that is in large part related to the pattern of land development, the total is about $4,083 million in 1953 dollars.

2. Water Supply. It has been noted in one article surveying the water problem, that "an extraordinary growth of suburban residential projects, many of which include a water system separate from that of the central city occurred after 1945." In the same article figures on public water supply by size of community in the United States in 1950 were estimated as follows:[25]

Population Served	*Number of Water Supplies*
Over—100,000	93
10,001—100,000	1,141
5,001— 10,000	2,667
1,001— 5,000	8,314
Under— 1,000	8,346
Total	20,561

The above figures indicate that 80 percent of the public water systems served communities of 5,000 or less population. The size of the water system and number and density of customers are significant factors in determining costs and charges to consumers. Thus, in a 1955 survey by the Tennessee State Health Department of metered residential water rates charged in communities with public water supply systems (publicly- and privately-owned), variations in average rates for 2,500 gallons of water by population size for 154 communities were as follows:[26]

Population Group	*Average Rate*
Under— 1,000	$2.06
1,000— 3,000	2.13
3,000— 5,000	1.96
5,000— 10,000	1.83
10,000— 35,000	1.42
35,000—400,000	.94

In an economic activity such as water supply and other utilities, where economic returns to scale increase up to a large size,[27] the post-World War II proliferation of small community systems has contributed to increased real costs per unit of service. The price index of water charges to household consumers increased by 28.4 percent from 1953 to 1957.[28]

Over the same period, consumer household expenditures for water increased from $724 million to $970 million[29] or, if adjusted for price change, to 793 million (1953) dollars. This would indicate about a 10-percent increase in household

[25] H. E. Jordan, "The Problems that Face Our Cities," *Water, Yearbook of Agriculture, 1955* (Washington, D.C.: United States Department of Agriculture), p. 651.

[26] Tennessee State Planning Commission, *Sanitary Service Charges in Tennessee,* Nashville, Tennessee, 1955, pp. 17, 18.

[27] The economies of scale in water supply are indicated by available data on comparable 1955 monthly rates per 1,000 cubic feet (7,500 gallons) charged by 432 publicly-operated systems serving populations of 10,000 or more throughout the country. Thus, rates of under $3.00 were charged by 58 percent of the systems serving populations of 10,000-49,000; by 71 percent of those serving 50,000-99,000; by 85 percent of those serving 100,000-499,000; and by 83 percent of the systems serving 500,000 or more. For basic data, see American Water Works Association Staff, "A Survey of Operating Data for Water Works in 1955," *American Water Works Association Journal,* January-June 1957, v. *49,* pp. 553–696.

[28] United States Department of Labor, Bureau of Labor Statistics, *op. cit.,* p. 5.

[29] United States Department of Commerce, Office of Business Economics, *U.S. Income and Output* (Washington, D.C., 1958), p. 150.

water consumption. If it is assumed that there was a proportionate 10-percent increase in water supply capacity, and the average 9 percent construction cost increase of the 1953–57 period[30] is applied to the added capacity, the average increase in plant costs spread over all existing 1957 water supply plants would be about 1 percent. Higher interest rates in new financing and in refinancing might add another 1 or 2 percent to the average cost of all household water consumed. It seems likely, however, that about 25 percent of the 28.4-percent increase in average water rates between 1953 and 1957 was due to other causes than higher construction costs and financing interest rates. About $177 million of the $240 million current dollar increase in household water expenditures between 1953 and 1957 represented rate or price rises and, of the former amount, about $155 million would be due to other causes than increased construction and financing costs. Smaller than average new water systems and elongated distribution lines of some larger, new systems probably are important elements making for higher per-unit costs and rates.

3. Household Gas. Increased costs of bringing gas to households were reflected in a 1953–57 increase of about 10 percent in the price index of gas sold to households, almost double the rise in the consumer price index for all items.[31] In the preceding four-year period of 1949–53, the index of gas prices increased only 5 percent, while the total consumer price index increased 12 percent.

American Gas Association data suggest that part of the relatively greater gas price increase in the 1953–57 period than in the 1949–53 period represents cost increases due to a relatively greater 1953–57 increase in (miles of) distribution mains (23 percent) than in customers (14 percent). In the 1949–53 period the increase in distribution mains (15 percent) had been slightly less than the increase in customers (16 percent).[32] Also, from 1953 to 1957 the precentage increase in the quantity of gas sold annually was only about one and one half times as great as the percentage increase in *total* miles of gas main, whereas from 1949 to 1953 the annual quantity of gas sales had increased two and one half times as rapidly as the total miles of gas main. Data for a 4-year prewar period of 1935–39 tend to confirm the hypothesis suggested by the statistics for the 1949–53 and 1953–57 periods, namely, that a significant part of recent years cost and price rises can be traced to the need for relatively greater increases in distribution mains than in customers and quantity of gas sold. (See Table I)[33]

From 1953 to 1957 annual consumer household expenditures for gas increased from $1,560 million to $2,351 million.[34] About $205 million of the increased ex-

[30] The Associated General Contractors Index of Construction Costs, used by the Department of Commerce to deflate sewer and water construction expenditures, increased by 18 percent from 1953 to 1957 so that the average increase for construction throughout the period can be estimated roughly at 9 percent. For basic data, see *Construction Review, 1958 Statistical Supplement*, p. 54; and March 1959 issue, p. 34.

[31] United States Department of Labor, Bureau of Labor Statistics, *op. cit.*, p. 5.

[32] Relative increases in miles of transmission and field gathering mains were not significantly different between the first and second periods.

[33] M. J. Ulmer, *op. cit.*, has developed a series of capital-product ratios for an "all other" utilities group—"reflecting the growth of pipelines, gas utilities, trucking, air transportation and other new industries" (p. 25)—which showed a strong decline, indicating increased returns to scale, during 1938–41 and 1942–46, but showed a tendency toward levelling in 1947–50, the last period covered by the series (p. 497).

[34] United States Department of Commerce, *U.S. Income and Output, op. cit.*, p. 150, and *Survey of Current Business*, July 1959, p. 17.

TABLE I—PERCENTAGE INCREASES IN GAS SALES, CUSTOMERS, MAINS AND PRICE INDEX DURING SELECTED 4-YEAR PERIODS

Period	Percentage Increases In — Number of Customers: Total	Number of Customers: Residential	Quantity of Gas Sales Annually: Total	Quantity of Gas Sales Annually: Residential	Miles of Gas Main: Total[1]	Miles of Gas Main: Transmission	Miles of Gas Main: Distribution	Consumer Price Index: Gas	Consumer Price Index: All Items
1953-57....	14	14	37	44	23	23	23	9.5	5.1
1949-53....	16	16	58	52	23	25	15	5.0	12.3
1935-39....	8	8	23	19	6	n.a.	n.a.	0.7	1.2

n.a.—not available.

[1] The total includes field gathering mains, as well as distribution and transmission mains.

Sources: Gas industry information—American Gas Association, *1958 Gas Facts*, New York, 1958, Tables 44, 64 and 82 for 1953-57; for earlier years, *Historical Statistics of the Gas Industry*, New York, 1956, Tables 49, 50, 69 and 87. Consumer Price Index—United States Department of Labor, Bureau of Labor Statistics, *Consumer Price Index—Price Indexes for Selected Items and Groups*, Washington, September 1959, pp. 4-5.

penditures represented gas price increases.[35] The latter amount of increase would have been about $90 million less if the gas price increase had been no greater than the increase in the over-all Consumer Price Index.

4. Telephone Service. Influences similar to those affecting gas costs can be traced with respect to telephone service costs where the effects were reflected in increased telephone service charges, more in 1949–53 than in 1953–57. Between 1953 and 1957 household telephone service charges (adjusted for changes in excise tax rates) rose 5.8 percent, only about one-tenth more than the total consumers price index.[36] Over the same period, for Class A telephone carriers who provide service for about 90 percent of the telephones in the country, the number of telephones increased 27 percent, the annual number of local calls rose by 26 percent[37] and the miles of cable and aerial wire increased 42 percent.[38] In this period a percentage rise in sales (local calls) equivalent to the percentage rise in number of telephones may have increased earnings to largely offset increased carrying costs of disproportionately greater line extensions, and rate increases were not much greater than overall consumer price increases. (See Table II)

In the preceding four-year period of 1949–53 the total consumers price index rose 12 percent and the index for household telephone charges rose 18 percent; the number of telephones increased by 22 percent, the miles of aerial cable and wire by 27 percent and the annual number of local calls by only 15 percent. The failure of sales (local calls) to increase as

[35] Based on an increase of 9.53 percent in cost of household gas, shown by the Bureau of Labor Statistics' Consumers Price Index data.

[36] The component price index for household telephone charges in the Bureau of Labor Statistics' Consumers Price Index (1947–49 = 100) is 123.2 in 1953 and 123.8 in 1957. After adjustment of the figures for a 1954 reduction in the federal telephone excise taxes, equal to 5 percent of charges, the increase in charges (based on costs under public utility regulation) retained by the provider of the service was 5.8 percent.

[37] The annual number of toll calls, equal to 3 to 4 percent of the total number of calls, increased by 38 percent between 1953 and 1957. Federal Communications Commission, *Statistics of Communications Common Carriers*, for 1957, Washington, p. 21.

[38] *Ibid.* p. 19. The book cost of total telephone plant increased by 64 percent from 1953 to 1957.

TABLE II—PERCENTAGE CHANGES IN NUMBER OF TELEPHONES, LOCAL CALLS, MILES OF TELEPHONE CABLE AND AERIAL WIRE, AND TELEPHONE PRICE INDEX DURING SELECTED 4-YEAR PERIODS

	Percentage Increases In —				
Period	Number of Telephones	Annual Number of Local Calls	Miles of Cable and Aerial Wire	Consumer Price Index	
				Telephone	All Items
1953-57.....	27	26	42	5.8[1]	5.1
1949-53.....	22	15	27	17.9	12.3
1935-39.....	21	23	9	-1.8	1.2

[1] Adjusted for 1954 reduction of federal excise tax equal to 5 percent of charges.

Sources: Telephone industry information—Federal Communications Commission, *Statistics of Communications Common Carriers,* for year ending 1957, pp. 20-21. Consumer Price Index—United States Department of Labor, Bureau of Labor Statistics, *Consumer Price Index—Price Indexes for Selected Items and Groups,* Washington, September 1959, pp. 4-5.

rapidly as the distribution facilities probably was partly responsible for the need to raise charges one and one half times as much as all consumer prices. (See Table II)

In contrast to the latter experience, in the prewar period of 1935–39, the number of telephones increased 21 percent, the miles of cable and wire only 9 percent and the annual number of local calls by 23 per cent. The index of household telephone rates declined 1.8 percent, while the total consumers price index rose 1.2 percent. (Table II) Since the relative increase in the number of telephones (and in telephone calls) was two and one third times as great as the increase in miles of cable and wire, there were increased returns to scale (assuming no disproportionately great increases in other plant facilities) which permitted rate reductions.[39] To achieve this increased efficiency it apparently required a fairly concentrated locational pattern of new telephone users.

Telephone rate increases were relatively not much greater than in the index of all consumer prices in 1953–57 as increased patronage probably offset increased service unit costs allocable to disproportionately greater cable and wire extensions. Therefore, the amount of increased cost related to the disproportionate extension of lines cannot be estimated on the basis of aggregate expenditures and relative price changes for telephone services and for other consumption items.

5. Electric Utilities. In the case of electric utilities there was a reduction in per-unit (kilowatt hour) charges between 1953 and 1957 which apparently resulted from reduced unit costs. This came about through an increase of 51 percent in annual residential sales while only a 41-percent increase in plant investment occurred between 1953 and 1957. There was a 32-percent increase in per customer consumption, allowing greater utilization of existing lines, plus a 14-percent increase in the number of residential customers. With the aid of these developments there was a small reduction between 1953 and 1957 in the aver-

[39] M. J. Ulmer, *op. cit.,* (p. 483) shows annual capital-product ratios for telephones that declined from 2.36 in 1935 to 1.94 in 1939, reflecting increased returns to scale. The ratio continued to decline to 1.27 in 1946. Then it began to rise, with a sharp rise for the last two years of the series, bringing it up to 1.84 in 1950, indicating declining returns per unit of capital in the latter years.

age private electric company revenue per kilowatt hour sold for residential use.[40] It is likely, however, as indicated by one electric company executive (Laidlaw), that greater reductions in electric utility rates have been prevented by the sprawl and scatter of our metropolitan area land use development.[41]

6. Public Schools. There is a generally recognized need for an acceleration in the provision of public services to accommodate population growth and to meet various backlog requirements. The urgency of needs for some public service facilities may serve, however, as a catalyst for the construction of public service plants well below optimum size (from capital-cost and operating-cost viewpoints) in order to provide services for small, new subdivision developments. A view of the situation through a cross-sectional comparison of unit service costs for communities of different size in different parts of the country may not reflect economies of scale because there are differences in the quality of service provided. There are data, however, on capital and operating costs for a given quality of plant and services within a limited jurisdiction which illustrate the economies of scale.

Expenditures for local elementary and secondary public schools constitute the largest expenditure for a single function by state and local governments. The economies of scale in construction and equipment of schools are illustrated in a study by Isard and Coughlin based on elementary school building in Connecticut and secondary school construction in Massachusetts. They estimated that construction costs per square foot were 22 percent higher for a 20,000-square-feet elementary school and 33 percent higher for a 10,000-square-feet school than for an elementary school building of 60,000 square feet. For a 40,000-square-feet secondary school building, the construction cost per square foot was estimated to be 8 percent higher than for a 60,000-square-feet building, but lower than for the latter by 12 percent for a secondary school of 180,000 square feet.[42]

Isard and Coughlin also cited data on per pupil operating costs in several states which showed that per pupil cost decreased as number of pupils in a school increased. In Indiana, for example, per pupil operating costs ranged from $353 in secondary schools with enrollment of 50 to 99 pupils to $235 for schools of 900 to 999 pupils ($237 for schools of 1,000 or more).[43] Figures cited on total current expense per pupil in 8-year elementary schools in Pennsylvania school districts, 1947–48, showed a range of $124 for schools with 50-pupil average daily membership to $93 for schools with 350 pupils.[44]

Available evidence suggests that there has been a trend toward smaller schools which generally have higher operating costs as well as capital charges. From

[40] See Federal Power Commission, *Statistics of Electric Utilities in the United States, Privately-Owned* (Washington, 1957), p. xxiii. The electricity price index component of the Bureau of Labor Statistics Consumer Price Index, based on charges in large cities, however, showed a 2.5 percent increase during the 1953-57 period.

[41] See, C. D. Laidlaw, "Utilities In and Out of Planning," in *Urban Problems and Techniques*, P. L. Norton, editor (Lexington, Massachusetts: Chandler-Davis Publishing Co., 1959) pp. 130–154, particularly pp. 132–134.

[42] W. Isard and R. Coughlin, *Municipal Costs and Revenues Resulting from Community Growth* (Wellesley, Massachusetts: Chandler-Davis Publishing Co.) p. 71.

[43] *Ibid.*, p. 79. Source of data cited is "Analysis of Current Expenditures of Selected Indiana High Schools," *Indiana University School of Education Bulletin*, May 1954, pp. 1–28, in particular Table II.

[44] *Ibid.*, p. 82. Source of data cited is *Public School Attendance Areas*, A Report of the Joint State Government Commission to the General Assembly of the Commonwealth of Pennsylvania, Subcommittee on Public School Attendance Areas, 1951 Session.

1939–40 to 1953–54, public school enrollment (in kindergarten through 12th grade) increased by 14.8 percent; but the number of principals—presumably one to a school—increased by 17.8 percent.[45]

State and local expenditures for public elementary and secondary schools in 1953 totaled $6,234 million ($4,697 million for personal services and $1,537 million for construction).[46] Available state and local expenditure data for 1957 for local schools are sufficiently comparable to indicate the magnitude of change. The 1957 expenditures totaled $10,199 million ($7,426 million for personal services and $2,773 million for construction).[47] Data for 1953 and for 1957 exclude interest paid on outstanding debt. If the 1957 expenditure total is adjusted for increased student enrollment of 16.6 percent[48] and for price changes,[49] it is reduced to $7,586 million, comparable with $6,284 million for 1953. The $1,352 million may reflect increased quality of teaching, such as more specialists, to some extent, but it probably also reflects diseconomies of scale.[50]

7. *Sewer Service.* Sewage treatment plant capital and operating costs also have marked economies of scale. Thus, based on general cost estimating curves used by the Division of Sanitation of the Massachusetts Department of Public Health, Isard and Coughlin show capital outlays per million gallons daily capacity for complete sewage treatment plants at about $400,000 for a 2-million-gallons-daily plant, under $300,000 for a 10-million-gallons-daily plant, and about $250,000 for a 20-million-gallons-daily plant. The latter would serve a population of 200,000. Lesser economies of scale

[45] United States Department of Health, Education and Welfare, Office of Education, *Statistics of State School Systems: Organization, Staff, Pupils and Finances, 1953–54*, Washington, 1956, p. 27.

W. Z. Hirsch, "Expenditure Implications of Metropolitan Growth and Consolidation," *Review of Economic Statistics*, 1959 *41*, pp. 232–241, has presented data showing that the number of principals, superintendents and consultants per 1,000 pupils in average daily attendance increased from 1.65 in 1940 to 2.70 in 1958.

Based on a study of 27 school districts in the St. Louis area, Hirsch concluded that there are no significant economies of scale for school districts. It should be noted, however, that per pupil capital and operating costs for schools of different size may yield different results as to economies of scale than per pupil cost for school districts. (W. Z. Hirsch, "Analysis of the Rising Costs of Public Education," Study Paper No. 4, Study of Employment, Growth and Price Levels for the Joint Economic Committee, United States Congress, Washington, November 10, 1959, p. 239).

A different view than Hirsch's is taken by the Research and Policy Committee of the Committee for Economic Development. In its January 1960 summary policy statement based on a three-year study of the public schools, the Committee said, "The inefficiently small school district has been with us too long. For years we have known that a complete school program can hardly be conducted by a unified school system with less than 2,000 students. Advantages continue to accrue until a school system reaches perhaps 25,000 students.

Small enrollments do not reflect sparse populations. Rather they result from school districts covering tiny areas." R. Lazarus, *Can We Have Better Schools* (New York, New York: Committee for Economic Development, January 1960), pp. 18–19.

[46] United States Department of Commerce, Bureau of the Census, *Summary of Governmental Finances in 1953*, Release G-GF-53, October 20, 1954, p. 27.

[47] United States Department of Commerce, Bureau of the Census, *Summary of Governmental Finances in 1957*, Release G-GF-57, August 24, 1958, p. 32.

[48] United States Department of Commerce, Bureau of the Census, Current Population Reports, *School Enrollment:* October 1953, P-20, No. 52, January 22, 1954 and *School Enrollment: October 1957*, P-20, No. 80, Feb. 13, 1958.

[49] Expenditures were converted to 1953-dollar terms by use of implicit deflators for state and local government purchases of goods and services used by United States Department of Commerce to derive a constant dollar series of gross national product.

[50] A series of constant dollar per pupil daily current expenditures plus debt service were developed by Hirsch. After subtraction of the auxiliary service costs—for transportation, cafeteria, health services, etc.—the series exhibits marked stability over the 1900–1948 period; however, the biennial constant dollar daily expenditures per pupil exclusive of auxiliary services for the 1948–58 decade ($1,391, $1,403, $1,418, $1,406, $1,451, $1,454) suggest an upward trend. Hirsch, "Analysis of Rising Costs of Public Education," *op. cit.*, pp. 33–34.

were found for primary treatment plants.[51]

Isard and Coughlin also show data furnished by the same Massachusetts Department on costs of operating secondary sewage treatment plants in Massachusetts in 1953. For plants with a daily sewage flow of under .50 million gallons the cost per million gallons ranged between $38 and $87, and the estimated cost per capita per year ranged from $1.40 to $3.20. For plants with 1.70 millions or more gallons daily flow (excluding one plant identified as "known to be inefficient") the cost per million gallons ranged from about $11 to $20 and the estimated cost per capita per year between $.40 and $.70.[52]

The great majority of community sewer systems in the United States serve small populations. In a statistical summary of the Public Health Service's 1957 inventory of sewage facilities, it is pointed out that almost 76 percent of the communities with installed sewer facilities had less than 5,000 population and 95 percent had less than 25,000. Furthermore, as the population increased over the 12 years, 1945–57, there apparently was an increase in the proportion of the population served by small systems. Thus, from 1945 to 1957 the proportion of the total sewer-connected-population living in communities with populations of under 10,000 increased from 19 percent to 21 percent, but the proportion living in communities of over 100,000 decreased from 49 to 45 percent.[53]

Between 1953 and 1957, state and local government expenditures for sanitation increased from $703 million in 1953 ($372 million for construction and $331 million for personal services—including rubbish collection and street clearing in some areas) to $1,105 million in 1957 (including $622 million for construction and $483 million for personal service).[54] Adjusting the 1957 total of $1,105 million for a 7.9 percent population increase and for price changes,[55] leaves an increase of $185 million in 1953 purchasing terms that is more than in proportion to total population increase. This may be due in part to the larger urban than total population increase and to increased intensity of sewage treatment. On the other hand, a certain amount of automation in new treatment plants (especially in larger ones) should have helped reduce average operating costs.

In the provision of sewage, as well as educational services, large new capital outlays to overcome backlog requirements may have led to the increased total expenditures of recent years. The fact that there were 20- and 30-percent increases in constant dollar per-capita expenditures for public elementary and secondary schools and for sanitation, respectively over a 4-year period, however, suggests less efficiency in the provision of these services in many new areas than the prevailing average level of efficiency, as

[51] Isard and Coughlin, *op. cit.*, p. 66. The Massachusetts data were found by Isard and Coughlin to be consistent with data on 15 treatment plants constructed in Iowa for which cost data were published in 1955.

[52] *Op. cit.*, p. 76.

[53] J. R. Thomas and K. H. Jenkins, *Statistical Summary of Sewage Works in the United States* (Washington, D.C.: United States Public Health Service, 1958), pp. 26–27. The same source shows that one percent of the communities with sewer facilities had over 100,000 population. These communities contained 45 percent of the sewer-connected population and served over 53 percent of that population through their sewage discharge or treatment facilities.

[54] United States Department of Commerce, Bureau of the Census, *Summary of Governmental Finances in 1953*, Release G-GF-53, Oct. 20, 1954, p. 27; and *Summary of Governmental Finances in 1957*, Release G-GF-57, Aug. 24, 1958, p. 32.

[55] Price adjustment by use of United States Department of Commerce implicit deflators for state and local purchases of goods and services.

well as some improvement in quality of service.

8. Highways. It is not feasible to delineate increases in highway construction expenditures caused by local travel requirements related to the new pattern of urban growth from construction expenditures generated by other travel. A great deal of expensive multiple-lane highway construction in recent years, however, has been in response to heavy daily suburbs-to-city-and-return traffic. It has been estimated by Francis Bello that about half of the expenditures for the interstate highway system (being built with 90-percent federal grants-in-aid) will be for 5,500 miles of high capacity urban expressways, going around or into cities of more than 50,000 population.[56] The total federally-aided interstate highway program will involve about $25 billion in expenditures by all levels of government, to build about 41,000 miles of highway. A significant proportion of state and local government expenditures for other highway programs, no doubt, also is needed to accommodate the "extra" travel necessitated by the urban ribbon development of recent years.

The increase in highway construction expenditures can provide some rough approximation of highway costs in estimating the magnitude of increased costs related to the new urban development pattern. After adjustment for population and price changes, the 1957 expenditure for public highway construction was about 35 percent, or $1,053 million more than in 1953, in 1953 highway construction dollars.[57]

9. The Magnitude of Increased Costs. There doubtless are other private and public functions and services which have become more costly as a result of the changed pattern of urban growth. On the other hand, the various expenditure increases—adjusted for population and price changes—are only partly due to inefficiencies introduced by our plant layout for urban living of recent years.

As a point of departure, however, it is noted that in constant (1953) dollars, after adjustment for population change, the estimated aggregate 1953–57 cost increase for six functions was $6,918 million.[58] In 1957-GNP-price-terms the increase was about $7.5 billion. If it is assumed that one-third of the constant dollar expenditures increase, adjusted for population change, is due to upgrading in the quality of services and desired per capita consumption increases, there would still remain an increase of about $5 billion, more than 1 percent of the 1957 GNP. This indicates roughly the magnitude of the increase in real costs arising over a four-year period from economic inefficiencies related to the current pattern of urban development.

III. Possible Effects Upon Economic Growth and Inflation

If the present urban growth patterns continue without increased planning for coordinated land use, related inefficiencies in performance of everyday functions and in provision of necessary services will also continue to grow. Since much of the increase of economic costs is in the form of increased per capita capital outlays, larger than necessary amounts

[56] F. Bello, "The City and the Car," *Fortune*, October 1957, p. 158.

[57] Public highway construction in constant 1954 dollars. United States Department of Commerce, (*U.S. Income and Output, op. cit.*, p. 191) adjusted to 1953 base by use of Commerce Department implicit deflator for highway construction and adjusted for 7.9 percent population increase.

[58] The total of $6,918 million is the sum of estimated increases of $4,083 million for local transportation of people, $155 million for water, $90 million for gas, $1,352 million for public schools, $185 million for sewerage and $1,053 million for highway construction.

of long-term capital funds and of non-financial resources are utilized in financing and construction, respectively, of required service plants. The consequent increased drain upon long-term funds, labor, and material decreases the resources available for other capital formation. This tends to limit the total amount of capital formation in the economy as well as to raise dollar costs throughout the economy as competition for available resources is increased.

Another inflationary effect is created by the increases in real costs of transportation, utilities and public services which are translated into higher prices and user-taxes. The higher prices paid by producers directly increase costs while the increase in consumer cost of living indirectly creates pressures for production wage increases. The potential spread of increased production costs throughout the economy can adversely affect our international trading position as well as the stability and growth of the economy.

It may be argued that the 1953–57 growth experience was temporary and over the long-run economic growth will equal or exceed the 3-percent rate of the half century ending in 1957. That could happen despite diseconomies of scale resulting from inefficiencies inherent in urban growth patterns. It should be noted, however, that during the first half of the 1907–57 period the urban population growth continued to be concentrated in and close about the centralized industrial production centers of large cities. This pattern was a continuation of urban growth during the industrial revolution, dependent upon steam power, which could only be transmitted for short distances. Only in the last two decades has the pattern of relatively dispersed urban population growth assumed major proportions. As necessary services had to be provided in the new urban locations, diseconomies of scale have led to cost-and-price increases that might have been partially avoided.

It appears likely, therefore, that a continuation of post-World War II urban growth patterns would continue to foster less-than-optimum capital and operating facilities for certain everyday functions. The resultant uneconomic use of resources tends to restrict total capital growth in the economy and makes for cost increases. This exploratory study suggests that the magnitude of the real cost increase involved probably is significant enough to warrant much more intensive study of the problem in order to provide guidance for policies that might promote a more rational pattern of land use development.

Railroad Pricing: A Case Study

By KENNETH U. FLOOD*

THE objective of this paper is to describe and evaluate, from an economic rather than a legal standpoint, a recently applied approach to the pricing of a particular railroad transport service. The underlying assumption is that, if this pricing procedure is shown to be sound when tested in terms of a realistic application of economic principles, it should be given consideration in formulating regulatory policy.

The method in question, used in the so-called *Paint* case,[1] was highly publicized as a deviation from normally acceptable competitive rate-making procedure. The newly authorized price is below fully allocated (average unit) cost, justified by market research findings and price elasticity of demand calculations. In the past, demand considerations were limited to what transport price the commodity could bear (total transport demand) without due consideration given to demand elasticity for specific railroad service.

This article will describe briefly the general situation leading up to the case, the method used to justify the price change, and finally will evaluate this new approach in terms of whether or not it fits an economist's model of a pricing system designed to achieve the most economical use of our transport system.

Background of the Railroad Pricing Problem

Railroads had to be built in advance of demand because the availability of railroad service was an essential factor in generating that type of economic activity which would eventually require its services. Initial construction and essential improvements required high fixed and specialized capital investments[2] and resulted in excessively large single units in terms of plant capacity. Consequently, fixed costs are substantial, estimated to be as high as 66 percent of short-run, fully-allocated costs. Also complicating the cost structure is the fact that many elements of costs which might be considered variable in the short run are common to both the freight and passenger traffic. The presence of these significant fixed and common costs allows only a very arbitrary allocation of costs.[3]

In addition to the inability to calculate pertinent cost data coupled with the existence of chronic overcapacity, another significant factor that entered into the early pricing picture was that the railroad industry, considered in the aggregate because of its rate conference method of establishing prices, had a virtual monopoly in freight transport service. Until the 1930's the only effective competition came from water carriers in certain very limited areas.

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[1] *Paints and Related Articles in Official Territory*, 308 ICC 439 (1959).

[2] Turnover of capital for railroads is about once every three years. Compare this to the steel industry's capital turnover of once every one-and-one-half years. Dudley Pegrum, *Price Competition in Transportation* (distributed by Railroad Progress Institute, Chicago, Illinois, n.d.).

[3] See, *A Brief History of the Separation of Railroad Operating Expenses Between Freight and Passenger Services*, Statement No. 577, and *Rail Carload Cost Scales By Territories as of January 1, 1958*, Statement No. 2-58, both prepared by the Cost Finding Section, Interstate Commerce Commission. For a statistical method using multiple regression as the basic technique, see Meyer and others, *The Economics of Competition in the Transportation Industries* (Cambridge, Massachusetts: Harvard University Press, 1959).

As a result of limited competition the railroads attempted to maximize profits by an elaborate differential pricing scheme commonly called the "value of service" or "what the traffic will bear" concept. Since no substitute service existed for most commodities and hauls, the railroads could discriminate widely, charging high prices in cases in which the derived demand was believed to be inelastic and low prices if demand was elastic. These demand estimates were based primarily on the value of the goods to be transported: the lower the ratio of transportation costs to ultimate selling price the more inelastic the demand for transport service was considered to be.[4]

Low freight rates (below fully-allocated or average cost but above direct cost) were established when it was felt that such prices would stimulate more long-haul movements of agricultural products and basic raw materials having relatively high elasticities of demand for transport service. Assuming high fixed costs and excess capacity, lower than average prices would result in larger total contribution to overhead expenses.

To justify pricing of low value commodities at below fully-allocated costs it has been argued successfully that such prices do not burden other traffic by causing it to pay higher prices but in reality, benefit all traffic. Since all traffic supposedly covers direct costs, fixed costs are spread over more units, relieving other traffic of some fixed cost burden that would have to be borne by it had the low value freight not been able to move in substantial quantities because of high rates. This situation is commonly expressed by saying that the railroads are subject to the law of increasing returns, which is true up to the point of most efficient utilization of the existing plant.[5]

Changing Demand for Rail Transport. In the previous section, the classical approach to railroad pricing was described as differential pricing based on estimates of general transport demand regardless of the agency or agencies which transport it. Because of control over pricing by rate conferences and the Interstate Commerce Commission, this monopoly-based pricing scheme was effective in spite of potential intra-agency rail competition. What is shocking is that this method persists today and has, in effect, created a price umbrella under which a generally higher cost substitute form of transportation now flourishes. What was once effective, when only intra-agency competition existed, has been shown to be quite ineffective in the light of rapidly developing inter-agency competition especially from truck and barge transportation.

Although "value of the service" is still a valid consideration in railroad pricing and, in the author's opinion, should not be discarded, a different yardstick must be adopted, namely, one that takes into consideration the cost of alternative forms of transportation. Stated differently, the effective ceiling on a railroad rate on any commodity once was that commodity's ability to pay. The ceiling has now fallen, and is located at the point of the cost to the shipper of either hauling his own products in his own trucks or his own barges, or prices of substitute for-hire motor or water carriers.[6] Consequently, the present demand for

[4] Certain cost-of-service factors such as perishability, susceptibility to damage, and extremely low-density loading characteristics were also given some consideration.

[5] D. Philip Locklin, *Economics of Transportation* (Homewood, Illinois: Richard D. Irwin, 1954), p. 141.

[6] Transportation Policy: Hearings before Subcommittee of the House Committee on Interstate and Foreign Commerce on H.R. 6141 and other bills, Part I, pp. 406–407, 415–417.

rail service not only is the function of total price (which would include differences in costs of preparing goods for shipment) but is a function of service considerations as well, such as time-in-transit, reliability, and other factors.

The evidence now clearly points out that, in spite of the fact that the railroads are the low cost carrier especially for distances over 100 miles,[7] the continued use of this monopolistic pricing system has had a disastrous effect on their market position. In the years 1929 to 1957 inclusive, the national population increased 40 percent; the value of the gross national product, 124 percent; index of industrial production, 142 percent; and intercity freight ton-miles, 123 percent. During the same interval the participation of the nation's railroads in for-hire intercity freight decreased from 74.9 to 46.4 percent; and between 1946 and 1957 rail participation in intercity freight ton-miles declined from 66.6 to 46.4 percent. In comparison to rail freight ton-miles, which have increased only 38 percent since 1929, truck freight ton-miles as well as freight ton-miles moving over inland rivers and canals have increased thirteen-fold.[8]

Excluding the so-called Pocahontas railroads, the corresponding rates of return on net investment for eastern railroads declined from 5.58 percent in 1929 to 2.44 percent in 1951.[9] While other factors such as inflation and declining passenger patronage have contributed to this financial impairment, it seems apparent that the typical pricing approach, which included across-the-board percentage increases on top of a monopoly-based price structure, resulted in the railroads pricing themselves out of the market. It became a vicious circle of rising costs, rising rate levels through general rate increases, lower traffic volume, rising costs, and so on. Surely not helping the situation is the fact that the Interstate Commerce Commission has not formulated any regulatory policy concerning what price theory generally would be acceptable on competitive traffic, preferring to make individual decisions for each pricing case.[10]

Market-Oriented Pricing: The Paint Case

Publicized as an Interstate Commerce Commission authorized departure from typical railroad pricing, the *Paint* case describes a recent attempt by the eastern railroads to regain freight movements of a high value commodity lost to the truckers. Prices were cut on this service to a level below railroad fully-allocated or average unit costs. The strategy was to maximize net revenue through increased volume of traffic. Although the published report of the case did not describe the pricing procedure in detail, it did give the following pertinent information.

On the Demand Side. (1) From Department of Commerce published data, it was estimated that, in 1956, 4.5 billion pounds of paint and paint material were shipped from points in the eastern territory by all means of transportation.

(2) A survey was made, through the use of questionnaires, of many of the

[7] Meyer, *op. cit.*, p. 152; James C. Nelson, *Railroad Transportation and Public Policy* (Washington, D.C.: Brookings Institution, 1959), p. 172–173; Williams, *The Regulation of Rail-Motor Rate Competition* (New York, New York: Harper & Brothers, 1958), pp. 210–212.

[8] *Paints and Related Articles in Official Territory*, 308 ICC 439, 441 (1959).

[9] *Ibid.*, p. 441.

[10] For a discussion of the legal aspects see, Merrill Roberts, "The Regulation of Transport Price Competition," *Law and Contemporary Problems*, Autumn 1959; Nelson, *op. cit.*, chap. 5.

paint producers in the United States. Responses were received from twelve of the largest producers in the East, who shipped approximately 65 percent of eastern territory production, and from about 25 smaller producers. The results showed that, after subtracting tank-car and tank-truck shipments and all shipments under 20,000 pounds (traffic not subject to the proposed rates), 7.6 percent of the traffic moved by rail, 82.5 percent moved by for-hire trucks, and 9.9 percent by private trucks.

(3) From these and other sources, it was estimated that there is in this paint traffic a total annual rail potential of 1.4 billion pounds.

(4) From the survey returns and from oral testimony of two leading paint producers, the railroads estimated that under the new rates they may be able to regain 30 to 40 percent of the traffic.

On Cost Estimates. (5) From the 1956 one percent waybill study of the Interstate Commerce Commission, of 178 carloads of paint products found, 21 consisted of commodities subject to the new rates. Expanding these 21 shipments to a 100 percent base indicated that in 1956 approximately 2,100 carloads of the subject commodities moved in eastern territory. To test the 1956 sample, a similar study was made of the 1957 one percent waybill sample, which confirmed the accuracy of the 1956 sample.

(6) The 21 shipments in the sample were found to have an average haul of 528 miles, an average load of 53,300 pounds, and an average revenue yield of $407 per car.

(7) The above findings were then applied to 1956 cost data compiled by the Interstate Commerce Commission for boxcars in average trains in the eastern territory, with adjustments to reflect wage and price levels as of January 1, 1958. An average estimated out-of-pocket cost of $211 per car was obtained.[11]

(8) The new prices reflected drastic reductions, ranging from around 50 to 80 percent below motor carrier rates.

(9) The weighted-average revenue per car under these new prices for the average haul of 528 miles (sample average) would be $330. Subtracting from this the out-of-pocket estimated cost of $211 leaves an average contribution of $119 per car, 56 percent above the long-run out-of-pocket costs.

On Revenue Estimates. (10) Since the new prices represent drastic reductions in present prices, the revenue loss from present rail traffic was estimated at $250,000 a year. However, due to required heavier loadings under new prices and the consequent use of fewer cars, it was estimated that rail costs would be reduced by $75,000 on present traffic, of which one-third would accrue to shippers and two-thirds to the railroads. This would reduce the revenue loss to $200,000.

(11) To recover this loss, it was estimated that the railroad would have to increase their annual traffic volume by about 1,075 carloads per year, or by only 5.3 percent of the estimated rail traffic potential of 1.4 million pounds, as compared with the estimated 30 to 40 percent of total tonnage which they believe would be regained under the new prices.

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[11] The term "out-of-pocket cost" as used here is defined by the Interstate Commerce Commission as "costs which, over the long-run period, and at the average postwar density of traffic, have been found to be variable with traffic changes. They include 80 percent of the operating expenses, rents and taxes (excluding federal income taxes) plus a return of 4 percent after federal income taxes on 50 percent of the road property and 100 percent of the equipment. The allowance for return on investment represents that portion of the plant which, over the long-run period, has been found to be variable with traffic volume." Interstate Commerce Commission, *Rail Carload Cost Scales By Territory As Of January 1, 1958,* Statement No. 2–58.

(12) If the above result were achieved, the total revenue contribution of the paint traffic over out-of-pocket cost in eastern territory would be somewhere between $644,000 and $1 million per year.

(13) Possible motor carrier retaliation through price reductions was also considered. One of the motor carrier witnesses, a transportation statistician and cost analyst, testified that the revenue produced at 400 miles or less by the new rates would be profitable for motor carrier operations, the degree of profitability increasing as the distance decreases. Other motor carrier witnesses testified that they are capable of reducing their rates and would do so where they thought it would be to their advantage. The railroads then pointed out that if they could regain only the traffic now transported by motor carriers for distances exceeding 400 miles, which represents 16.7 percent of the total motor tonnage, their participation would increase from 7.6 to 24.3 percent of the traffic.

Analysis of this Pricing Technique

Assuming the railroad industry goal to be profit maximization,[12] the pricing procedure described above is certainly a step in the right direction. If a detailed description of the *actual* pricing procedure were available, it is conceivable that valid suggestions could be made to refine the method used although cost of refinement would also have to be considered. The one weakness may be the method used to estimate demand for railroad service under the proposed reduced rates. More extensive research would seem to be required.

As to the conceptual approach, this report reaches several basic conclusions. *One:* a differential pricing scheme based on "value of railroad service" is a more effective pricing approach for the railroads to follow than one based on a mechanical statistical allocation of the overhead burden which results in prices tied to an average cost or long-run marginal cost basis.[13] But the classical "value of service" concept should be revised to give greater weight to the demand for particular rail service rather than total demand estimates based on value of the commodity. In other words, greater reliance should be placed on market research information describing the localized competitive situation. When feasible, point-to-point prices tailored to specific shipper needs should be established.

As previously developed, railroads usually have lower direct costs but motor carriers have preferred service. These differences can be quantified for pricing purposes by considering demand as a function of the total "cost" of transport to the shipper which includes the freight rate, plus packaging, plus or minus any non-transportation cost savings (or dissavings) occurring to the shipper by virtue of the quality of transport service, i.e., speed, safety, required facilities, and service dependability. Theoretically at least, the shipper will always seek to use the least expensive carrier offering adequate service under the particular circumstances. Stated differently, today's demand for railroad transportation is very elastic even in the short run because services of other agencies of transport generally can be substituted. Sales of each agency are then a function of the rival's

[12] The only logical assumption at the present time since there is a real need for additional capital funds and since the railroad industry is not earning what could even be called a minimum reasonable return on investment. See, Nelson, *op. cit.*, chaps. 8 and 9 for an excellent discussion of railroad industry capital needs.

[13] See, Meyer, *op. cit.*, chap. 2 for contra view.

price.[14] Consequently, any railroad competitive pricing scheme to regain particular traffic movements must be tied to market studies which ascertain in detail the effects of price reductions on traffic volume, revenue, and profits. These market studies must also attempt to measure the time lag for regaining traffic after prices are reduced, since estimated future net revenue must be compared with revenue losses due to price cuts on present rail traffic. This is particularly significant when regaining tonnage lost to private trucking.[15] Reasonable accurate command of basic market data should prevent reductions causing needless sacrificing of revenue.

It will be recalled that an attempt was made in the Paint case to obtain such relevant market information. Although "time is of the essence" in pricing decisions, new prices can often be tested by limiting initial action to specific movements. Whether this is done or whether whole rate structures are changed as was done in the Paint case, a follow-up or feedback is always desirable, not only to test the accuracy of the underlying estimates of demand elasticity but as a guide to future pricing decisions.

Two: under circumstances such as exist in the industry today, railroad competitive prices should be allowed, if necessary, to gravitate to slightly above present short-run out-of-pocket costs.[16] In addition, the most relevant net revenue contribution estimates are those based on short-run out-of-pocket cost considerations. This is a slightly different approach from that used in the Paint case, in which long-run out-of-pocket costs were presumed to be the lowest level allowable and upon which estimates of incremental profits were based.

Since (a) the railroads are usually the low cost carrier even when all costs are considered and (b) approximately 90 percent of motor carrier costs vary directly or proportionately with traffic carried,[17] it can be argued that only long-run out-of-pocket or marginal costs should be considered. To support this position it is said that there seems to exist only a limited degree of excess capacity in terms of freight car supply and terminal facilities as compared to almost unlimited line-haul capacity when the railroads are considered as one functioning unit. This argument recognizes that the "below average cost" pricing is valid only to the point of most efficient utilization of existing plant; that beyond this point further increases in traffic will crowd the carrier's limiting facilities and unit costs will tend to rise. Therefore, since the railroads are presumed to have limited short-run capacity, price reductions should remain near the level of present average unit cost so that, if and when new volume is gained, overhead can be spread over more units and, consequently, future average unit costs will tend to be less than present average unit costs, possibly approximating the present below-cost prices.

Although the above argument has some validity, the "limited capacity" presumption (upon which the argument is

[14] An exception to this is the fact that there exists a certain amount of rail captive traffic. Also, since motor and water carrier services are not uniformly substitutable for those of the railroads, railroad demand functions retain some elasticity differentiations.

[15] The one major truck leasing company contacted by the writer stated that they require shippers to sign five-year leases.

[16] Although preferring the terms "incremental" or "direct," the author chose the term "short-run out-of-pocket" in order to contrast it with the Interstate Commerce Commission's long-run out-of-pocket concept used to calculate costs in the *Paint* case.

[17] Findings of the Interstate Commerce Commission, Bureau of Road Carriers. The Bureau also found that the average operating ratio for Class I motor carriers of property was around 96 percent. Pegrum, *op. cit.*, p. 23; Meyer, *op. cit.*, p. 86–87.

based) may be challenged. Actually, short-run cost considerations are more realistic, more effective pricing strategy, more likely to maximize both short-run and long-range profits, and they should result in the best allocation of the nation's transport resources. This statement rests on a look into the future, that is, to new technological developments that affect future capacity and service requirements—innovations requiring immediate capital investment funds.

Reasoning Behind a "Short-Run Out-of-Pocket Cost" Price Approach

While the interests of both the railroads and society require that long-run prices recover what has been termed fully-allocated costs including reasonable returns on investment, the case for pricing on a short-run out-of-pocket cost basis when demand conditions require it is as follows:

Railroad Investment as a Sunk Cost. Present railroad plant investment should be considered as a sunk cost for pricing purposes. Most of the railroads' capital investment is in specialized equipment and facilities having little market value. Under these conditions, once it is determined what is a fair rate of return, how is net investment to be evaluated—original costs, cost of reproduction, or market value? If one were to pursue this evaluation problem, he would quickly realize that the Interstate Commerce Commission figures are but crude approximations. How then can one talk of particular transport prices in terms of covering fully distributed or total average unit costs? It is hard enough to come up with adequate direct cost estimates that can be relied upon to set the minimum price level.

Service Improvement. Transport competition involves not only price competition but also service competition. Consequently, in order to offset their service disadvantage, rail prices must be far below motor carrier prices. The questions now arise: Why is there such a service disadvantage? Does it have to be? One answer is that sufficient capital funds are not available to take advantage of the many technological improvements that have been developed in recent years—improvements which would solve many service problems as well as involve cost economics and expansion of present capacity limitations. Not to be overlooked is the new concept of integrated transportation service such as piggyback and containerization. Given better service, price differentials on competitive traffic would then not have to be as great.

John W. Barriger points out the great need for capital funds, and cost economies and service improvements that could be derived from increasing the present rate of capital investment:

> "The virtually completed transition from steam to diesel motive power has produced significant savings in operating costs and improvements in service. Yet, until other facilities are improved correspondingly, the railroads cannot realize the full economic potential of the diesel locomotive. Notable improvements urgently needed are: (1) Cars of modern design correlated to diesel locomotives (e.g., Larger cars equipped with roller bearings to avoid delays from hot boxes and allow faster speed); (2) Signal and communication systems for more precise control of train movements (e.g., Centralized traffic control signaling system); (3) Yards and terminals designed to conform with diesel-powered road operations (e.g., Automatic retarder freight yards); (4) Improvement of physical characteristics and track patterns of line."[18]

[18] John W. Barriger, *Super-Railroads for a Dynamic American Economy* (New York; New York: Simmons-Boardman, 1956), p. 72.

It was estimated that $2 billion a year would be required for railway modernization.

In recent years, the railroads have had to rely almost entirely on internal sources of capital funds, chiefly depreciation charges and retained earnings after taxes. Rail managements claim that stock financing on a favorable basis is not possible due to low earnings, low dividends, and the necessity for maintaining low payout ratios to maintain capital investment from earnings; that many roads could not market bonds for improvements because of underlying liens and poor profit prospects; and that equipment obligation financing is limited by available depreciation funds and earnings for servicing interest and serial maturities.[19] Since there are so many economies that can be gained through additional capital investments and since future traffic volume hinges on service competition which can be substantially improved by taking advantage of existing innovations, and since retained net earnings seem to be the only way new capital funds can be generated at the present time, this calls for what Professor Meriam of the Harvard Business School would call Cico (quick cash in-quick cash out) pricing policy—maximizing net cash revenue in the short run so that investments resulting in future economies can be made. The only way the railroads can obtain long-run maximum plant efficiency, and consequently a competitive edge in both average unit cost and service, is to attempt to maximize net revenue now.

This additional revenue will support more rapid modernization of rail plant and equipment investments, which in turn will result in improved transport service, more high-paying traffic, and so on—reversing the previously described vicious cycle of less tonnage, less revenue, more rate increases, and so forth.

Capacity Considerations. Underlying the arguments emphasizing long-run rather than short-run out-of-pocket cost pricing schemes has been the idea that an increase in the volume of traffic moving over given facilities will eventually bring about a condition of increasing costs. The plant will then be working beyond its optimum efficiency. After a flow of traffic produces persistent congestion and operations beyond normal capacity, the carrier will be required to increase capacity by new and added facilities. In other words, looking at the long-range result, costs that are now fixed in the short-run will become variable.

Normally this is sound reasoning but one must be realistic about future rail transport—given sufficient capital funds. Already mentioned are some of the significant technological improvements that would result in improved service, lower costs, and increased capacity through better utilization of the present basic plant. Mentioned also were such things as better car utilization, longer trains, reduced transit time, and increased terminal and roadhaul efficiency.

But the most important basis for asserting that future capacity considerations should not be a controlling element in present competitive pricing is the large promise inherent in "piggyback" and containerization. It seems obvious that, with electronic centralized traffic control devices and larger trains, present intercity roadbed capacity is almost unlimited. Future capacity squeezes might come from terminal facilities and freight car shortages. But would it? The writing on the wall seems to be that piggyback and containerization not only give the

[19] Nelson, *op. cit.*, p. 408.

railroads the flexibility of service which has always been considered an inherent advantage of the truck but, in addition, will actually eliminate the need for any additional terminal switching facilities. In fact, considerable switching service could be eliminated and much branch line track could be abandoned.

Because of this new equipment, present type freight cars are rapidly becoming obsolete. Technological progress, obtainable only through increased capital investments, should eliminate future capacity problems, thus supporting the argument that short-run profit maximization is the sounder pricing policy.

Preservation of Rate Relationships. A strong argument supporting the classical "value of service" pricing system is the idea that presently located industrial and commercial activity is the direct result of a long established railroad rate-relationship; that, although there is presently a distorted allocation of transport resources that could be corrected through hard-hitting railroad competitive pricing methods, this would result in a greater economic waste by forcing relocation of economic activity, thereby creating greater economic waste. This may be true, but it could be argued that availability of private and contract trucking operations, which presently account for approximately 75 percent of the total intercity truck ton-mile traffic,[20] has been breaking down these rate-relationships since World War II and that all the railroad would be attempting to do is regain this traffic which is already moving at prices below the railroad price patterns. Increased net contributions from recaptured traffic would, in the longer run, lower average rail costs and possibly again open the door to limited restoration of rate relationships but at lower levels.

Price Retaliation by Competitors. The ability and necessity for competitor's price-cutting retaliation was briefly considered but not adequately discussed in the *Paint* case. Since the railroads are considered to be the low cost carrier, especially in terms of direct costs, one might think that the motor carriers could not retaliate if the new railroad competitive prices were below the motor carrier's out-of-pocket costs (estimated to be about 90 percent of fully distributed costs). But this would not generally be true and certain railroads have already found this out the hard way. For example, on peach movements out of Georgia into the Northeast, the railroads cut their prices to a level which they believed to be below motor carrier average out-of-pocket costs. Having had only 10 percent of this movement they brought in hundreds of refrigerator cars at the beginning of the shipping season, anticipating that they would regain close to 90 percent of the business. Actually, however, they gained only 20 percent. Why? They did not take into consideration another element in the motor carrier cost structure—that of joint costs. Although motor carrier costs might have been 90 percent variable, the railroad pricing experts forgot that once a truck hauls freight south, it must return. The truckers had a potential unbalanced movement—having high value, high rated, less-than-carload freight moving south which made substantial contributions to total costs. Except for peach traffic, however, they lacked sufficient north-bound freight to fill their trailers. Theoretically then, any revenue derived from the north-bound haul that covered special costs of loading and unloading the peaches and contributed something to total cost was profitable as long as the

[20] *Ibid.*, p. 136.

total revenue from the north- and southbound movements covered total cost. Therefore, effective pricing strategy calls for an analysis of total motor carrier freight movements. Reversing this example, it may be that the railroads need cut their price only to a point above motor carrier average unit costs if the average return movement is not covering one-half of the total round trip costs.

Another important factor is the motor carrier's potential future share of a commodity movement once a railroad price cut goes into effect. If, as in the *Paint* case, the railroads have only 10 percent of the movement and hope to get 40 percent, this leaves 60 percent for the motor carriers under their present price. The motor carriers must consider the loss of revenue from the 60-percent potentially remaining traffic when considering price retaliation, even though their costs might allow a price cut. Calculation of loss of motor carrier revenue based on the estimated new market shares must be made and considered by railroad pricing experts.

Conclusions

In conclusion, it should be recognized that this analysis considered pricing action in a situation in which all or most of the railroad traffic had been lost to higher cost substitute transport agencies. Further analysis is needed to cover these pricing situations: (a) to encourage cost-reducing quantity shipments, and (b) to protect remaining competitive traffic in which the railroads presently have a lion's share but the trend is unfavorable. If, for example, there is an active trend toward substitute transport service the relevant loss is not what would be an immediate loss if prices were reduced, but what would be the revenue loss after the trend line is projected into the future.

This paper proposes that on competitive traffic where the railroads do not have the largest market share more attention should be given to the demand for particular rail movements and that these demand estimates be derived from extensive market research to determine both the short-run and long-run traffic potentials at different price levels. Critical to this type-pricing scheme is an analysis of cost structures of substitute transport services (the key here being directional movements and total contributions of all potential traffic) to determine ability to retaliate through price-cutting.

When necessary, in order to maximize revenue, prices should be allowed to gravitate to the level of the rail's direct or out-of-pocket costs. Supporting this short-run theory is the fact that additional capital funds are urgently needed; funds that would bring considerable cost economies and service advantages to the railroads. Also, this short-run concept of pricing can be justified when one takes a realistic look at future capacity requirements.

Development of a Regional Concept for Farm Management Research in New York

By HOWARD E. CONKLIN* *and* KENNETH C. NOBE**

THIS is a story about the development of an idea. The work started with an unresolved mixture of the general and comprehensive concepts of geographers and the more specific, morphological concepts of those who make soil maps or identify type-of-farming regions. At first the work was a vague quest for "homogeneity"—some kind of geographic homogeneity that ought to be important to farm management research workers. We dismissed the geographer's approach early as too general; as an approach that is too far above the level of farms and farm businesses. We were not happy with the morphological, sometimes called descriptive, approach of the soil specialists and those who make type-of-farming studies but it was difficult to escape the morphological pattern of thinking. And, when we finally broke away, we immediately encountered a logical dilemma for we found ourselves concluding that our work would be useful only to the extent that it anticipated the results of the research it was to serve. Would it be legitimate for us to supply to farm management research workers maps with lines drawn on the basis of our guesses about the things to which they hoped to find answers? We concluded that it not only would be legitimate but that by doing so we could best serve their interests. In reaching this conclusion we also came upon an idea that appears to be fundamental to any classification effort.

Changes in farm management research provided the incentive for this study. Improved methods have made it feasible to sample large areas in a single study, and increasing use of systematic methods for estimating the income possibilities of alternatives open to farmers have focused attention on the geographic variation in agricultural resources.

Experimentation with segment (cluster) sampling techniques for farm management surveys was begun at Cornell in 1949. This work used as its starting point the ideas developed at Iowa in connection with preparation of the Master Sample of Agriculture.[1] These ideas were extended and modified to produce techniques suitable for the design of surveys under the particular conditions of New York State and the special objective of farm management research there.[2] This made farm management surveys of large areas a feasible undertaking.

The sampling techniques initially developed were field-tested in one county in 1950.[3] They were revised in minor details following this test, then were applied on a full-scale production basis in the design of a sample for the two-mil-

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[1] R. J. Jessen, "The Master Sample Project and Its Use in Agricultural Economics," *Journal of Farm Economics*, May 1947.

[2] Q. M. West, *Some Alternative Techniques in the Measurement of Farm-Business Characteristics*, Ph.D. Thesis (Ithaca, New York: Cornell University, 1951).

[3] H. E. Conklin, *Notes on a Sample Designed for a Cost-of-Milk Production Study in Otsego County, New York* (Ithaca, New York: Cornell University, Department of Agricultural Economics, unnumbered mimeo, 1950).

L. C. Cunningham, *Commercial Dairy Farming in Otsego County, 1949–50* (Ithaca, New York: Cornell University, Department of Agricultural Economics, A. E. 772, 1951).

lion acre area of the state that since has been recognized as one of our major regions and identified as the Central Plain.[4] Since then the same techniques have been used in designing samples for two more regional surveys.[5]

The initial effort to delineate the first region, the Central Plain, was an intuitive quest for homogeneity. Our initial guide was the notion that a "homogeneous" area would make a good unit for a farm management study. This thought was combined with an estimate that available resources would cover the cost of surveying a sample of the farmers in an area of one to two million acres at an acceptable level of precision. Our aim then became one of delineating, as homogeneously as possible, an area of one to two million acres in western New York State.

But "homogeneity" was not very clearly defined in our minds. The term "western New York" has been used traditionally to refer in a general way to the limestone area between Syracuse and Buffalo in which "general" farming in various forms is practiced. Limestone soils and general farming were taken as our starting points. The soils in the counties of the area had been mapped in detail at various times in the past and a new state soil association map had just been completed when this study was undertaken.[6] A type-of-farming study for the state had been completed and the results of numerous block-type farm management surveys were available for specific townships and portions of counties dating from 1908.[7] Personnel on the project were operationally familiar with farming and one member of the team had systematically examined farm properties in a portion of the area in connection with farm income-expectancy classification work.

The actual work of regional delineation was done in the field. Topographic maps, available in up-to-date form for that part of the state, were used as work maps. Soil maps and available economic land classification maps were carried at all times. The most recent summary of climate for the state was included in the field kit. The results of past farm management surveys were included, or consulted periodically in the office. Agronomic recommendations and the results of field trials with various crops and cultural practices also were important items among the background materials.

We had an imposing array of background information but we learned that this array did not define homogeneity. It left unanswered the problem of weighing the various items of evidence into a composite judgment.

Various elements in our background information gave conflicting impressions. Differences in farming are not, for example, perfectly correlated with differences in the physical characteristics of

[4] K. C. Nobe, *An Improved Segmented Sampling System for Farm Management Surveys* (Ithaca, New York: Cornell University, Department of Agricultural Economics, A. E. 991, 1955).

L. C. Cunningham, *Commercial Farming, Central Plain Region, New York, 1953–54,* Cornell University Agricultural Experiment Station Bulletin 921, 1957.

[5] L. C. Cunningham, *Commercial Dairy Farming, North Country Region, New York, 1955–56,* Cornell University Agricultural Experiment Station Bulletin 942, 1959.

C. P. Gratto, *Estimates of Precision for the North Country, New York Regional Sample Design,* Master's Thesis (Ithaca, New York: Cornell University, 1959).

L. C. Cunningham, *Letters to Dairymen to Report an Economic Study of Commercial Dairy Farms in the Plateau Region of New York, 1957–58* (Ithaca, New York: Cornell University, Department of Agricultural Economics, A. E. Res. 37, 1960).

[6] M. G. Cline, *Soils and Soil Associations of New York,* Cornell Extension Bulletin 930, May 1955.

[7] W. M. Herr, *The Economic Structure of Agricultural Areas in New York State,* Ph.D. Thesis (Ithaca, New York: Cornell University, 1954).

land as one moves across the countryside. The lack of correlation in this respect is especially great in the western part of New York State—an area where a farmer can make (at least) a living in a wide variety of alternatives. Land that is reasonably uniform in soils, climate and topography may be found in several types of farming. Some land that is equally uniform supports farms that vary in levels of economic development. In some instances these differences in farming occur by areas, not merely from farm to farm in a random fashion.

As we started drawing the regional boundary line we found ourselves singling out first one then another item for our determining factor as we moved along. Part of the way we would follow a soil line; part of the way a topographic line; part of the way a "level-of-farming" line; etc. We were operating on an ad hoc basis. We knew it but had not developed a better basis. Thinking at this stage was guided by a knowledge that people would ask questions, particularly when the survey results became available, as to why certain areas had been included and others omitted from the region we were delineating. Our reply to these anticipated questions was formulated at a simple level at this stage; it was formulated by asking ourselves: "If we had the questioners in a bus and were crossing the boundary line in the area under question, could we point to a significant change at the line, preferably on the ground but possibly on soil maps or in other sources of basic information?"

The first step forward came in the recognition of farms as our basic units. As the work progressed and various sections of the line were examined and re-examined, a more sophisticated and less defensive version of the above question began to take shape in our minds: "If we had the opportunity to operate farms on the two sides of the line, how differently would we operate them?" A further phrase was added to this question very shortly: "And what would we expect our income levels to be in the two instances?" The question in this form began to provide a basis for the rational integration of the body of information we were carrying with us—a rationale to substitute for the earlier ad hoc approach. We began to look at farm units, existent and possible, and to see our body of information as giving us starting points at least for judging the manner in which these units would respond to various treatments; the manner in which they would perform in use. Soil, climate, and topography came to be looked on as factors that determine response to management. We began to see farm buildings in terms of their usefulness in the kind of farming that appeared to be optimum and in terms of the capital investments needed to modify them. We began to see other capital aspects of farms, such as drains, fences, hedgerows, and fertility and lime levels in a similar light. Our focus became real estate as a composite factor of production, subdivided into farm units, modifiable at a price, and capable of certain levels of performance.

The job then became a task in classification—performance classification. This focus on farms sharpened our procedures immediately. It specified a relevant universe of individuals—farms as physical units of real estate. Our specific task became one of classifying these individuals using performance characteristics as criteria. But it still left many questions unanswered. Questions ranged from such simple ones as the actual identification of present farm boundaries to those that involve the complex aspects of performance. Because of limited funds it was not

possible to map farms precisely. Much more handicapping, however, was the fact that the experimental data required to determine the manner in which given farms would respond to various complex patterns of treatment were meager. Soil maps are primarily of soil morphology; and the relationships between soil morphology and soil performance have not been revealed in full detail. The same is true of our knowledge of other aspects of land.

What, precisely, is performance? As we studied performance more closely, we also found ourselves facing some complex conceptual problems. Which performance characteristics should be emphasized and what relative weights should be assigned to them? What cutting points should we choose on the ranges of values for these characteristics when we define classes? What, in fact, should we recognize as performance characteristics and thus differentiate from morphological and other characteristics?

The ability of a farm to yield net income in the hands, say, of a most-probable operator is clearly a performance characteristic. But, as miles per gallon is only one of the performance characteristics of an automobile, so income seemed but one of a family of characteristics that should be recognized for farms. After all, we reminded ourselves, the basic problem in farm management is how one maximizes income in farming, not merely the level of income attainable under some specified set of circumstances. We were beginning to look forward to the possibility that we might delineate a region for which certain farm management recommendations would fit reasonably well throughout. We were beginning to see the possibility of breaking the entire state into regions that could be studied independently and for which individual recommendations might be developed that would be more applicable than state-wide recommendations—goodness of fit to be judged, probably, in terms of the proportion of farmers whose incomes would be increased or decreased specified amounts if they were to adopt the recommendations.

This emerging desire for homogeneity in terms of the applicability of recommendations led us to a point where we began to visualize performance as a complex maze of production functions and to see these as our fundamental criteria. This helped to clarify our problem but did not simplify it. The description of a farm in terms of production functions is complex even in static terms. In static description the notion of crop response, say, to fertilizer, becomes a relatively simple thing despite the fact that such response usually is different for each field and each crop, and different from year to year. In dairy farming, crop responses must be followed on through the cow to the milk pail. Such complex inputs as land, building arrangements, and machinery investments must be handled. And for our problem we needed more than static curves—we needed to anticipate responses to technological change and other dynamic elements.

How closely can a classification be tied to the ends it is to serve and still have scientific validity? We could not avoid this question because a discussion of the applicability of recommendations necessarily leads to subject matter that is central to the field of farm management. We had come full circle! We had started with the problem of improving farm management research as posed by farm management specialists. Because land is important in farming, we had developed the notion initially that surely some sys-

tem of land classification would help. But we had ended by concluding that we would have to go back to farm management for our criteria in order to insure that our classification would be meaningful.

How legitimate is it to fashion research tools through use of the subject matter of the field within which the tools are to be applied? Is it permissible to tie a classification so closely to ends it is to serve that its criteria are drawn from the area of those ends? Did we slip somewhere in arriving at the conclusion that this must be done?

Could we, however, have reasonably come to any other conclusion? Surely we could not have stopped at the level of pure morphology—the delineation of regions in terms only of descriptions of the static characteristics of soils, climate, topography, and location. Pure facts are endless. Without notions of relationship, performance, usefulness, and purpose, one could easily spend his life elaborating the morphology of a single 10-acre area. The morphology of farms would be an almost equally pointless stopping place. If our thinking went no further than morphology, descriptions of the botanical composition of herbage in the hedgerows would be as important as the dimensions and arrangements of the barns. Even relationships and performance characteristics fail to provide their own criteria of relevance. We could get as lost in descriptions of the relationships between inputs and outputs for a given field as in descriptions of the field itself —a field can be treated in so many different ways. Some purpose, some end-in-view, is needed, else one can sort only randomly among the multitude of possibilities.

Ends-in-view often are played down in work of this kind. The announced quest commonly is for some kind of "basic" classification that is supposed to have an all-pervasive meaning. Statements of ends-in-view, for which the classification is to serve as a means, appear to compromise such ambitions; to reduce the effort too nearly to something that invites the critical scrutiny of ordinary folks. There are elements of this kind in many writings about classification systems. The present system of soil classification, for example, stops at morphology for its criteria and some authors justify this in terms of an attempt to produce a "basic" or "natural" classification. But knowing the infiniteness of morphology on the one hand, and the practical usefulness of actual soil maps on the other, one cannot escape the conclusion that more than random choices have been made in both the selection of soil characteristics and the choice of class intervals within the ranges of values for these characteristics. Soil classifiers have looked on their maps as means to practical ends in spite of their frequent denials. The same holds for other important systems of classification.

When ends-in-view are left implicit, however, they sometimes are forgotten. It seemed to us that the hazards of critical scrutiny would be small compared to the hazards we would encounter if we forgot what we were trying to do. So we made explicit the idea of delineating agricultural regions in a way that would enable differentiating farm management recommendations and thereby improving their goodness of fit. We followed this general idea with the thought that relevant performance characteristics of farms considered as units of real estate provide the most suitable basis for judging the goodness of fit of recommendations in efforts like this one that aim to subdivide the farm universe geographi-

cally. In theory all performance characteristics could be expressed as production functions. In practice, while they can be thought of as input-output relationships, data are not available for very many precise functional expressions. Functions in any event must be qualified with statements specifying how and when inputs would be applied.

A performance description of a farm then becomes a statement of what one would expect to get from that farm if he were to use it in various ways—the ways of use, for our purpose, being chosen within the range of alternatives that offer some promise of being economically feasible, or at least of being considered by someone. The statement would include physical quantities and descriptions of processes as well as monetary figures. At present many statements would be in relative rather than absolute terms—yields, labor requirements, etc., in one area relative to those in other areas.

Performance descriptions of farms would indicate, of course, that recommendations should be varied even from farm to farm down the road. A system of classes could be set up in which individual farms could be classified individually in terms of the recommendations that would fit them. This would be a system of categorical classes. But we were aiming at the creation of regions, and regions are cartographic classes—classes that can exist only as areas on a map. We also felt that not more than twelve regions should be created for the state as a whole at this stage in our efforts to geographically differentiate research efforts. This was to be a highly generalized cartographic classification. We did not believe that small areas should be shown separately nor that any of the regions should have long, narrow extensions or otherwise be too awkward in shape. In other words, we laid down fairly stringent minimum-area and maximum-awkwardness specifications. Our problem then became one of making a classification of farms that would reveal as many of the apparent differences in the suitability of recommendations as we could in a cartographic system with few classes and highly limiting minimum-area and maximum-awkwardness specifications. Farms were our units of classification, however, even though our classes were to be very broad.

But could we classify in terms of anticipated research results when our classification was to be used in getting those results? This question was raised even though at first it seemed that the above logic fully justified tying our classification closely to the ends it was to serve. Criticism from this angle pointed out that the goodness of fit of recommendations was to play an important part in our classification, that we could not know for sure how well specific recommendations actually would fit the farms of given areas and that, in fact, our work was being done to aid in the design of research for the purpose of learning how specific recommendations would fit various farms.

The quest for an answer to criticism from this angle led us to re-examine the general logic and function of classification. We labored at first under the traditional notion, already mentioned, that scientific classifications should be in some sense "fundamental," "basic," and of general meaning—under the notion that classification should have independent standing. Is not our biological system of classification of this nature? Is not the system of soil classification claimed to be of this nature (though by this time we had suspicions of this claim)? There is no doubt that ideas of fundamentalism

and basicness are highly attractive but our examinations of even the biological system of classification led us to conclude that it too actually is pragmatic and that also it has been subject to change. There is no useful system of classification that does not rest upon many hypotheses and no system lives very long unless arrangements are made to feed back into it the results of efforts to find new knowledge and the results of new developments in the techniques men have for using the objects being classified.

Dynamic classifications can be aids to research. This was the conclusion we reached when we began to see classification processes as themselves subject to change; subject, in fact, to orderly change as a result of material fed back from the activities they help to promote and guide. We would violate no logical principles if we used the results of past research, including the hypotheses generated by it, to design a classification for further research, *provided* the results of the new research were fed back into the classification before it were used for the next successive step in research. Our estimates regarding the probable fit of given recommendations to particular farms were hypotheses derived from past research. We were simply using what was already known as efficiently as possible in designing probes that would reveal what was unknown. After these probes were made, lines on our maps would be revised and the sequence repeated.

We were still left with many "minor" problems though we felt that we had made a track through the woods. We still had all the problems of a multiple-criterion system; we would be heavily dependent upon the personal knowledge, skill, and judgment of the men doing the job; and we were faced with the fact that farms, after all, are not unique units, but instead are constantly undergoing change. There would be much "flying by the seat of the pants" and many individual decisions to be made regarding the details of the classification structure. The end product would not be a precise and proven product, but it seemed to offer promise of being more useful than any alternative.

Two reports have been prepared and more are planned. An agricultural regions map has been completed and published.[8] The development of the classification concept and the methodology involved have been systematically recorded and evaluated.[9] It was our good fortune to be able to purchase recent airphoto coverage for thirty counties of the state soon after the lines for the Central Plain were completed. We drove twelve thousand miles of traverse lines through these counties making continuous verbally recorded notes on the visible characteristics of the farm units we passed and keying these notes to the airphotos. Farms in the areas between the traverses were later studied stereoscopically on the airphotos. Their characteristics were inferred from their appearance on the photos and the relationships between the photo and the ground appearances of nearby farms as we had recorded these in our notes. The results of this effort then were combined with the fund of information we already had from soil surveys, climatic studies, farm management surveys, and other sources.[10] (Re-

[8] K. C. Nobe, et al, *Agricultural Regions of New York State (Preliminary)*, Cornell University, Department of Agricultural Economics, A. E. 1090, 1958.

[9] K. C. Nobe, *An Agricultural Regions Concept for New York State*, Ph.D. Thesis (*Ithaca, New York:* Cornell University, February 1959).

[10] K. C. Nobe, *and* I. R. Starbird, *An Annotated Bibliography of Background Material for the Description and Delineation of Agricultural Regions in New York State, 600 References by Subject Matter* (Ithaca, New York: Cornell University, Department of Agricultural Economics, unnumbered mimeo, August 1958).

sults of the airphoto study also are being used to prepare a generalized income-expectancy map for these counties, but this is another study.)[11]

The published agricultural regions map has been marked "preliminary." In our present view such a map must necessarily be always preliminary, but this map was marked preliminary for another reason. There are no recent airphotos for some parts of the state and we have not yet been able to travel extensively and systematically enough in some of these areas to accumulate the field observations we feel are needed to supplement information supplied by soil maps, farm management surveys, and other sources.

We are looking forward now to removing the "preliminary" label, to considerably amplifying our descriptions of the regions, and also to the possibility of expanding the classification scheme to levels of higher cartographic detail and a larger number of classes. Experimental work has been started on the job of subdividing the twelve agricultural regions into a total of some fifty to seventy-five agricultural sub-regions. Farm management surveys have been completed and summarized for three of the regions now and have revealed geographically localized differences in farm businesses within these regions. The assumption will be made initially that these are differences at a sub-regional level though we always will be on the lookout for possibilities that regional boundaries should be adjusted.

Systematic explorations of alternatives in farming will form a vital part of the total research effort. An activity in farm management research that was started following completion of the Central Plain survey will form an important and integral part of the total research effort visualized in this paper. It involves a systematic exploration of the alternatives open to farmers in specified areas.[12] Farm management surveys tell where farm businesses stand today. They also reveal the static relationship between certain farm business characteristics and income. These can be used as bases for constructing hypotheses regarding what would happen if given groups of farm businesses were to be changed in specified ways. They do not, however, provide the basis for an exhaustive set of hypotheses because existent farm businesses do not include all possibilities. In fact, many of the farm business possibilities—possible combinations of soil, topography, livestock, equipment, buildings, feed inputs, fertilizer inputs, choices of timing, etc.—often are missing or poorly represented among the farms surveyed. Nor do surveys ordinarily trace the sequence of steps involved in building or remodeling a farm business. Systematic exploration of the probable consequences of making specific choices among the alternatives on given farms at given times—the probable consequences of adopting various recommendations—will provide the best basis, short of actual trials by farmers, for testing and revising the lines we have drawn around regions and hope to draw around sub-regions.

Actually, work in evaluating alternatives has moved ahead of us in the task of delineating sub-regions. The Central Plain survey revealed geographically lo-

[11] K. C. Nobe, et al, "Traffic Lights for New York State Farm Land?" *Farm Research,* Vol. XXIV, No. 2, June 1958. For a discussion of income-expectancy mapping see, H. E. Conklin, "The Cornell System of Economic Land Classification," *Journal of Farm Economics,* August 1959.

[12] C. V. Hess, *Profitable Adjustments for New York Dairymen,* United States Department of Agriculture and Cornell University Agricultural Experiment Station Bulletin 952, 1960.

calized differences in farming so marked that workers on the evaluation project did not consider it feasible to take the whole region as a unit. They decided to work toward a closer fit of recommendations than would be possible at the regional level. They accepted our notion of "homogeneity" but wanted a higher degree of it. Needless to say, we are encouraged by this.

Summary

Perhaps the most significant contribution of this effort has been the notion that a cartographic classification of farms in performance terms (we would have called efforts like this *land classification* a few years ago) can be made an important part of a farm management research continuum. Almost equally important to us, though a by-product of the effort, is the conclusion that quests for "basic," "fundamental," "natural," "scientific" classifications, in the traditional sense, are doomed to failure. Classification is most useful as a tool for research and communication, and to serve as a tool it must be flexible. A classification system should have a built-in mechanism for feeding back into itself the results it helps to produce.

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The Utility of The Economic Base Method in Calculating Urban Growth

By HOMER HOYT*

SINCE the first definitions of basic and non-basic occupations by Haig in 1928,[1] Nussbaum in 1933,[2] my own articles and reports from 1936 to 1954,[3] John W. Alexander's Economic Base Study of Madison, Wisconsin in 1953[4] and Richard B. Andrews' nine articles on the economic base in *Land Economics* from May 1953 to February 1956,[5] the economic base concept has passed through a stage of critical examination from 1955 to the present time by Tiebout, Blumenfeld, Pfouts and other writers.[6] It is asserted that the economic base as a method is too simple and crude for the purpose of accurately forecasting the population of an urban region, chiefly because the ratio between basic and non-basic employment is not constant but variable.

There are two different purposes for using the economic base method; the first is to estimate *numbers* of workers and numbers of population, and the second is to calculate the money flow of imports and exports into an urban region. Consequently, when the economic base method is used for estimating future population, it is not necessary to take into account the dollar wages of basic workers or the dollar value of all basic activities.

Change in Ratio Between Basic and Non-Basic Employment

The ratio between basic and non-basic employment is subject to change as a result of three factors: (1) In time of war the service or non-basic activities are reduced to a bare minimum. As I pointed out in *Economic Survey of the Land Uses of Arlington County, Virginia*[7] in 1951, the ratio of private to government jobs, which was as low as 1.10 to 1 in

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[1] Robert M. Haig, Regional Survey of New York and Its Environs (New York Regional Planning Committee, 1927), pp. 42, 43.

[2] F. L. Nussbaum, *A History of the Economic Institutions of Modern Europe* (New York City, New York: F. S. Crofts & Company, 1933), p. 36.

[3] Homer Hoyt, *Federal Housing Administration reports: Northern New Jersey,* July 1937; *Hartford, Connecticut,* March 1938; Arthur M. Weimer and Homer Hoyt, *Principles of Urban Real Estate* (New York, New York: The Ronald Press, 1939); *The Structure and Growth of Residential Neighborhoods in American Cities* (Federal Housing Administration, 1939), p. 131; "Economic Background of Cities," *The Journal of Land & Public Utility Economics,* May 1941, pp. 188–195; *The Economic Status of the New York Metropolitan Region in 1944* (Regional Plan Association of New York, 1944); *Economic and Housing Survey of the Orlando Metropolitan Region,* July 1946; *The Economic Base of the Brockton, Massachusetts Area,* May 1948; *Economic Survey of the Land Uses of Evanston, Illinois,* 1949; *Economic Survey of the Land Uses of Arlington County, Virginia,* 1951; *Economic Survey of the Land Uses of Fairfax County, Virginia,* June 1954; *Economic Survey of Montgomery and Prince George Counties, Maryland,* June 1955.

[4] John W. Alexander, *An Economic Base Study of Madison, Wisconsin* (Madison, Wisconsin: University of Wisconsin Commerce Papers, Vol. I, No. 6), June 1953.

[5] Richard B. Andrews, nine articles on the economic base, *Land Economics,* appearing in issues from May 1953 to February 1955 and February 1956 issue.

[6] Ralph W. Pfouts, *The Techniques of Urban Economic Analysis* (West Trenton, New Jersey: Chandler Davis Publishing Co.), 1960; Reprints of articles by Richard B. Andrews, pp. 5-183, by John W. Alexander, pp. 186–212, and by Hans Blumenfeld, pp. 229–277 (first published in *Journal of the American Institute of Planners,* Fall 1955, pp. 114–132), by Charles M. Tiebout, pp. 280–306, pp. 396–407, and by Ralph W. Pfouts and Erle T. Curtis, pp. 307–393.

[7] Homer Hoyt Associates, *Economic Survey of the Land Uses of Arlington County, Virginia,* September 1951, pp. 1–2.

1943, rose to 1.46 to 1 in 1947. Most of the government jobs were in fact basic so that, while this does not show the exact ratio of change between non-basic to basic, it does afford an approximation. (2) As employment in any urban region becomes more diversified and the community produces more of the products which it consumes in its own borders, there is less need to produce goods for export so that the percentage of total workers in basic activities will decline. (3) As real family incomes increase a lower proportion is spent for the basic necessities of food and clothing and more for houses, which are produced locally, or for services.

In using the economic base method in forecasting future population of an urban region, allowances must be made for changes in the basic-non-basic ratio. Planners have expected too much of the economic base method if they have thought it is a magical formula for predicting future population of an urban region. There just "ain't no sech animal." To predict future population it would be necessary to predict what new industries will locate in a given city, what demand new inventions will create for products now unknown, or what a Khrushchev or a Castro will do in the cold war. The cold war created first a demand for military aircraft, which caused a rapid growth of employment and population in San Diego, Los Angeles, Wichita and other cities producing aircraft; and then the emphasis on the missile brought about a contraction in the demand for aircraft and a reduction of employment in aircraft factories. There is no known electronic device or method which can foretell all the myriad interactions which produce historical events and which produce corresponding changes in our economy. The growth of cities in the United States is now inevitably linked with world politics and their future is inseparably bound up with its aberrations.

In the year 1800, when New York, Philadelphia, Boston and Charleston were the dominant American cities, who would have predicted the future growth of Chicago, St. Louis, Detroit and Cleveland? In the year 1840 who could have forecasted the growth of San Francisco, Salt Lake City or Denver? In 1900 who could have foretold the future population of Los Angeles, Houston, Dallas or Miami? In the year 1960 what method will accurately predict the population of our metropolitan areas in the year 2000? To be sure, the great metropolitan areas are now here and few new cities are likely to spring up in America but many basic forces, even excluding the atomic bomb from consideration, can alter the rates of growth of industrial cities in unpredictable ways.

The fundamental question is whether the economic base has a value in determining city growth even if it is not an infallible device for predicting the exact amount of that growth. Can an urban region grow without any increase in basic activities, or are basic activities necessary at all?

There are refugee colonies in Hong Kong, Karachi, and Jericho in Jordan which are supported by the relief funds of the United States and the United Nations and in which the residents do not work to pay for the food which they consume. Unless the inhabitants of a city are supported by charity, however, they must export something to pay for the food which they consume but do not produce in their own borders. Of course, if the boundaries of a metropolitan area are extended to include part of a state, it is possible for the larger region

to be self-supporting and to require neither imports nor exports to pay for imports. But this is not true of any metropolitan region within the United States which has a high degree of specialization.

Critical articles on the economic base tend to obscure the vital facts, first, that some basic activities are necessary in every urban community without which it cannot exist; second, that strong and pronounced growth in the population of any community cannot take place without a corresponding growth in basic employment; and third, that the population of any urban region will decline if there is a reduction in the level of basic income below the amount required to pay for its imports.

Past Relation Between Increase in Basic Activity and Population

Criticisms of the method have been directed toward its usefulness in estimating urban community growth. The first question to be answered is whether or not there is any past relationship between increase in basic employment and growth of population. If there is such a relationship in the past, it is reasonable to assume that the same relationship will continue in the future. On the other hand, if cities grow rapidly without any increase in export activities, entirely as a result of increasing the number of service or non-basic workers, then there is no logical reason to use the economic base method as a forecasting tool.

The plain, simple principles of the economic base have been obscured by such statements as: "the distinction between 'basic' and 'non-basic' seems to dissolve in thin air" and that non-basic activities are the permanent and constant element, indeed the truly constant element in the metropolitan area economy.[8]

Is it possible for a city or urban region to increase substantially without any increase in employment in export industries? It is true that refugees in Hong Kong, Karachi and Jericho have increased the population of those cities, but the basic support of the refugee colonies is relief funds supplied by the United States, Great Britain or the United Nations. There is abundant evidence that the growth of most American cities in recent decades has been the direct result of the increase in basic employment. Examples can easily be cited of this relationship between basic employment and population of urban regions in the 1950–1960 decade.

Houston, Texas. The increase in the population of the Houston metropolitan area (Harris County) from 806,701 in 1950 to 1,232,179 in 1960 was made possible by the increase of its manufacturing employment (chiefly basic) from 68,574 in 1950 to 96,400 in March 1960, and its total employment from 325,300 to 502,-500 in the same period.

Dallas, Texas. The population of the Dallas metropolitan area (Dallas County) increased from 398,564 in 1940 to 614,799 in 1950 and to 943,963 in 1960, as a result of the growth in manufacturing employment from 26,700 in 1940 to 52,100 in 1950 and to 107,100 in 1960, and total basic employment from 74,446 in 1940 to 134,730 in 1950 and to 216,000 in 1960.[9]

The economic base principle has a worldwide application. The population of Delhi State in India increased from 488,188 in 1921 to 636,246 in 1931, to 917,939 in 1941 and to 1,744,072 in 1951, as a result of a growth in employment

[8] Hans Blumenfeld, "The Economic Base of the Metropolis," *Journal of the American Institute of Planners,* Fall 1955 in Pfouts, *op. cit.,* p. 277.

[9] Southwestern Bell Telephone Company, Dallas, Texas.

from 202,290 in 1921 to 268,307 in 1931, to 351,014 in 1941 and to 639,129 in 1951. It is significant to note that increases in industries that are chiefly basic was most pronounced for the entire period 1921 to 1951, with gains in manufacturing from 52,737 to 155,814, in public force and administration from 10,924 to 118,672, in transport and communications from 11,260 to 33,494 and in banks and finance from 2,287 to 10,086. Thus, population increased three-and-a-half times because manufacturing employment tripled and government employment increased ten times.

Examples could be multiplied of metropolitan regions whose past growth has been the result of the increase in basic activities. The spectacular growth of the Chicago area in its present city limits from 32,949 in 1850 to 309,635 in 1870, to 1,112,575 in 1890, to 3,372,936 in 1929 was caused chiefly by the increase in the value of its manufacturing products (largely basic) from $2.6 million in 1850 to $76.9 million in 1870, to $664.6 million in 1890 and to $3,885 million in 1929.[10]

The population of the Washington, D.C. metropolitan area grew rapidly from 378,605 in 1900 to 571,882 in 1920 and to 1,968,562 in 1960 as a result of the growth in basic federal employment from 26,500 in June 1900 to 90,559 in July 1920 and to 228,000 in 1960.

San Diego, California. In the San Diego metropolitan area, where the population increased from 556,808 in 1950 to 1,008,522 in 1960, the manufacturing employment in the period 1947 to 1956 increased from 21,600 to 57,600, and the total employment from 88,600 to 156,900.

[10] Homer Hoyt, *One Hundred Years of Land Values in Chicago* (Chicago, Illinois: University of Chicago Press, 1933), pp. 481, 482.

Just as the population growth of an urban region is caused by an increase in basic employment, so also are declines in population brought about by a drop in basic employment.

The effect of the increase and decrease of basic employment upon population is shown by the case of Akron, Ohio. Akron was one of the fastest growing cities in the United States from 1910 to 1920, when its population jumped from 69,067 to 208,435 as a result of the upsurge in factory employment, chiefly in the manufacture of automobile tires, from 23,450 in 1910 to 87,898 in 1919. When rubber tire employment dropped from 87,898 in 1919 to 46,100 in 1921, the Akron population fell from 208,435 in 1920 to 172,000 in 1922. When the rubber factories and other Akron factories again increased their number of workers from 46,100 in 1919 to 68,596 in 1926, with 65,726 in 1929, the Akron population increased from 172,000 to 249,000. When again factory employment in Akron dropped from 65,726 in 1929 to 38,500 in 1932, Akron population dropped from 255,000 in 1930 to 238,000 in 1933, with thousands of workers on relief. Again, when Akron factory employment rose from 38,500 in 1932 to 117,942 in 1943, Akron population rose from 238,000 in 1933 to 274,000 in 1944.

A decline in basic employment in an urban region is not necessarily registered immediately in commensurate decline in population of the region. Some transient workers leave the city; other workers who are discharged continue to live in the city but receive unemployment compensation or live on past savings. However, the weakening effect of a reduction in basic workers upon the economy of the region soon becomes apparent.

The Wichita, Kansas case illustrates what happens when there is a substantial

cut in basic employment. As a result of the government requirements for military aircraft, employment in Wichita (Sedgwick County) area aircraft factories (basic employment) jumped from 5,160 in 1947 to 42,850 in 1957, with 33,000 employed at the peak in the Boeing plant alone. Total employment shot up from 60,870 in 1947 to 130,500 in 1957,[11] while the population of Sedgwick County rose from an estimated 203,149 to 312,131, a gain of 53.6 percent in the same period.

As a result of the curtailment in production of military aircraft, aircraft production in Sedgwick County was reduced from 42,850 in 1957 to 30,150 in July 1960. In the summer of 1960 there were 12,000 to 16,000 persons seeking employment in the Wichita labor market area; department store sales dropped 17 percent; there were hundreds of vacant houses and apartments advertised for sale or rent and permits for new dwelling units in Wichita City dropped from 3,045 in 1955 to 1,144 in 1959. The population of the area has registered a slight gain since 1957, but it is at a very slow rate compared to that of the ten years from 1947 to 1957. In the three years from January 1, 1957 to December 31, 1959, the number of electric meters increased by only 2,356, or at the rate of 785 a year, while in the ten years prior to that the increase was 52,808, or at the rate of 5,281 a year.

The Wichita metropolitan area has other basic sources of employment besides military aircraft, such as trade, finance and other manufacturing, since it had a population of 203,149 in 1947 as a distributing center before aircraft production became dominant, but it is obvious that the increase in military aircraft employment—all basic—was the primary cause of the rapid upsurge in population from 1947 to 1957 and that the decline in military aircraft employment, not counteracted by an increase in other basic employment, was primarily responsible for the slackening of the rate of growth from 1957 to 1960.

[11] Kansas State Employment Service.

Forecast of Future Population by Economic Base Method

With such overwhelming evidence of the causal relationship between increase in basic employment and population, planners, public utility companies, chambers of commerce, market analysts and population experts have projected future population growth of specific urban regions upon the predicted growth of basic employment and particularly of basic manufacturing.

Denver, Colorado. The median forecast of the increase of population of the Denver metropolitan area, consisting of Denver, Jefferson, Arapahoe and Adams Counties, from 780,000 in 1957 to 1,600,000 in 1980, made by the Inter-county Regional Planning Commission of Denver, was based on the premise that its manufacturing employment would increase from 48,800 in 1957 to 126,452 in 1980; that federal government employment would increase from 20,700 to 39,276 in this period and that total employment would rise from 296,526 to 576,000 in this 23-year period.[12]

Los Angeles and Other California Cities. The Los Angeles metropolitan area increased in numbers from 4,000,000 in 1947 to 6,000,000 in 1957 as its manufacturing employment rose from 387,100 to 771,800 in the same period. Quoting Dean James Gillies of the University of California at Los Angeles:

[12] Inter-County Regional Planning Commission, *Future Population Denver Metropolitan Area*, March 15, 1960, Table I.

"Between 1947 and 1956 the population of California increased from 9,672,000 to 13,260,000, or by 3,592,000. During the same period the total private non-agricultural employment increased by 1,174,000 and manufacturing employment increased by 494,000, or by about 59,000 positions a year."

"Assuming no change in the economic base of the state, and this is a conservative assumption, it will be necessary to provide approximately 2,000,000 positions in manufacturing between 1960 and 1980 if the population growth forecast for the state is to be maintained."[13]

"While a newly developing area can expand as a result of an inflow of investments from other regions, it is rather generally accepted that in the long run no area can grow and develop without some base industries. Base industries are defined as those that produce goods and services for sale outside of the immediate area in which they are located. This sale generates a flow of income and capital into an area, which causes an expansion of plant and equipment, which in turn creates new employment opportunities and induces population to come to the region."[14]

Thus, in the opinion of Dean Gillies, the expected population growth of California will not be realized without an increase in basic manufacturing:

"If the demographers are correct in their prediction of California's population growth, the corollary of the proposition is that there will be (1) tremendous expansion of manufacturing operations within the state, or (2) large scale unemployment within the state, or (3) the growth simply will not take place."[15]

In short, it has not yet been demonstrated that an urban region can grow substantially in population by an increase in its non-basic industries only. It may reduce its reliance on imports by greater diversification, but a new impetus to growth must come primarily from basic employment.

The fact that a large urban region with its plants, pools of skilled workers and all of its service workers is in a position to attract new basic industries to supplant declining basic industries does not refute the economic base analysis, but only confirms it. If all the basic activities were withdrawn from a city, it would have no means of paying for its imports and its residents would starve to death unless they were supported by relief, invested income or some form of income from outside the area. A metropolitan area may coast for a while, living on accumulated savings, but no metropolitan area of any size can continue to maintain itself if its economic base, with its export activities, is seriously impaired. Our own history affords too short a time to pass judgment. Our great metropolitan centers are in a nation still rapidly growing in wealth and population, with a higher and higher proportion of income going for services, for advertising, amusement and recreation, tobacco and liquor. Still in the decade from 1950 to 1960, of the central cities in 24 metropolitan areas in the United States having a population of 1,000,000 or over, all have lost population except Los Angeles, Houston, Dallas, Milwaukee, Kansas City, Atlanta, Seattle and San Diego. It is significant to note that the metropolitan areas which have had the greatest rate of growth in the past decade—Los Angeles (53.2 percent), Houston (56 percent), Dallas (44 percent) and San Diego (80.2 percent)—have also had a corresponding rate of growth in manufacturing employment, as I have shown in this article. While the entire metropolitan areas of the other urban regions have continued to grow in the past decade, which, if an examina-

[13] James Gillies, *Industry's Role in Metropolitan Growth, a Public Management Problem* (Los Angeles, California: Real Estate Research Program, University of California, 1960), No. 9, pp. 41.
[14] *Ibid.*, p. 38.
[15] *Ibid.*, p. 40.

tion were made would doubtless be due to some expansion in basic activities in some form or other, none had a rate of growth higher than 30 percent except Washington, D.C. with 34.5 percent. The striking growth of the metropolitan areas where the increase of basic employment has been the highest certainly will not refute the economic base theory or gain converts for those who would abandon it. If export industries are expendable and replaceable so easily, the mayors and chambers of commerce of these great central cities such as New York, Philadelphia and Boston, which have lost population, certainly want to know the address of the new industries that will be so attracted by the fact that these metropolitan areas have the largest number and variety of consumer services in the world. If the presence of consumer services is so powerful a force, why has the rate of growth of New York, Chicago, Philadelphia, Boston and Detroit, which have the most of these services, declined in the past decade while the rate of growth of Los Angeles, San Diego, Houston and Dallas, which started out at a far lower level of consumer services, far outstripped that of the older, larger cities? Is it not a fact that these California and Texas cities grew because they offered more opportunities for the growth of basic employment?

Hans Blumenfeld's statement that no community (i.e. metropolitan area) which during the last century passed the half million mark has lost population, is offered as proof that cities of that size will maintain themselves indefinitely.[16] Rome, with a population of 1,000,000 at the time of Augustus, declined to 17,000 by the ninth century and, although based on 'power and wealth,' the decline in its population was just as much due to a decline in this power base—its economic base—as if its population had been supported on the exports of jars of olive oil. Nineveh and Babylon were once great cities, Ninevah having a power base and Babylon a power and commercial base, and both are now only mounds of clay. The recent growth of Moscow, New Delhi, Karachi, Cairo and Athens was all due to a power base—increasing government employment at the capital. Blumenthal cites Leningrad as a striking example of the ability of a city to survive despite loss of its basic functions. Leningrad's population had expanded to 2,416,000 in 1916, as a result of the growth of basic war industries, but by 1920 its population had fallen to 722,000 after Moscow became the new capital. Leningrad was able to increase its population to 1,690,061 in 1926, and to 3,191,000 at the latest census, only by securing new basic industries. On the other hand, Moscow, which had a population of 2,000,000 in 1917, or less than that of Leningrad, after declining to 800,000 in 1920, increased in numbers as the new capital and power center of Russia to 4,137,000 in 1939 and to over 5,000,000 according to the last census. Certainly these are "striking examples" of the immediate effect of the rise and fall of basic activities upon the population of a city.

There are of course numerous examples in the United States of cities whose population has drastically declined after their sole economic base was exhausted, such as the mining cities of the West. The population of Virginia City, Nevada declined from 40,000 in 1873 to 603 in 1950, and the population of Leadville fell from 40,000 in 1880 to 4,081 in 1950. The chief present support of these once glamorous mining camps is tourists. The population of Decatur, Illinois has re-

[16] Hans Blumenfeld, in Pfouts, *op. cit.*, pp. 276–7.

cently declined and there are 1,100 vacant houses there because a large industry closed down. Large metropolitan areas have diversified supports—the residents often have income from capital invested elsewhere—so that it is a complex problem to show the exact effect of the decline or increase in any single basic support. When the single basic support is isolated the effect on population of any change in it becomes immediately apparent.

The most important contribution of the economic base theory, in my opinion, is its function in furnishing a sound method of analyzing the economic structure of an urban region. The basic supports of any metropolitan area are not constant but are subject to continual fluctuations. The ratio between basic and non-basic employment is not fixed but variable. In our affluent society a constantly higher percentage of the national income is devoted to services so that the value of exports of any city that is required to pay for imports of food and products not produced in that city may diminish. Future studies of the economic base of urban regions should seek to measure these changes, and by application of a consistent method of measurement of the economic base, show the changes in the proportion of basic employment. Material for future studies is provided by the United States Census of Population by national, state and local tabulations of employment by types for cities and metropolitan regions.

Further analysis of the economic base should consist of two different types of inquiry: first, those relating to future basic employment, total employment and population, which is measured in terms of numbers of persons; and second, the value of the imports or exports of an urban region, which is measured in dollars.

If the purpose of a study is to estimate future population, then it must be recognized that there is no magic formula for predicting future historical events or the population of any specific urban region. If future population growth of any urban area is considered a desirable goal or a requisite for planning, then a careful study must be made of what new basic industries or services may be attracted to the specific city, or what existing basic activities or services might expand their employment. It is a study of possibilities or probabilities only, and not of certainties, and it is not possible to predict or estimate the exact effect of the new basic employment upon total population. The overwhelming weight of the evidence does indicate, however, that if there is no fresh accession of the numbers engaged in basic employment or in the dollar incomes of those engaged in basic activities, the particular urban region will thereafter grow very slowly if it grows at all.

An entirely different approach is necessary if the problem is to determine the dollar value of the imports or exports of an urban region. There is of course a relationship between the amount of wages or salaries of basic workers and the number of non-basic workers, since high-income families can support more in the service lines than the low-income families. However, a different technique can be employed in measuring the dollar amount of imports or exports of an urban region from that which is applicable to the problem of numbers of basic or non-basic workers.

Editor's Note. In the May 1961 issue of *Land Economics* Homer Hoyt will describe a new method by which the dollar value of the imports into any urban region in the United States can be approximately determined.

Wage Rate Increases Versus Telephone Rate Increases

By LAURENCE S. KNAPPEN*

WAGE rate increases granted since the end of World War II have been repeatedly cited by the telephone industry, including the operating subsidiaries of the American Telephone and Telegraph Company, as a major justification for the many telephone rate increases which it has sought and won.

This contention, at least as respects the American Telephone and Telegraph Company and its 1946-to-1959 experience, appears to have little validity when subjected to even mild scrutiny. The Bell Telephone System's official figures, as filed with the Federal Communications Commission, disclose the facts and are the basis of the ensuing tables and accompanying observations.

The fact that wage rates have been increased again and again is beyond all dispute. The annual reports filed with the Federal Communications Commission by the twenty-two American Telephone and Telegraph subsidiary companies, for example, show that the average compensation per scheduled hour increased from $1.15 in 1946 to $2.48 in 1959. That is, they more than doubled. But the wage cost *per telephone* for the same group of companies and for the same thirteen-year period rose less than one percent!

The explanation is really rather simple if one stops to study the matter at all: wage costs per telephone are not simply a function of wage rates but depend also upon (1) the number of employees, and (2) the number of telephones. While the hourly wage rate more than doubled over the 1946–1959 period, the number of employees increased by only 26 percent but the number of telephones rose by 135 percent, a rate greater than the 116 percent rate of increase in the hourly wage cost.

The number of employees actually fell by nearly 8 percent in 1958 and by another 1¾ percent in 1959. The number was even smaller in both 1958 and 1959 than it had been in 1955, despite the addition of over 12,000,000 telephones, which was itself an increase of more than 25 percent above the number in place in 1955.

The net result of this relatively small increase in the number of employees, and the relatively large increase in the number of telephones, was to offset almost completely the effect of the wage rate increases in relation to the wage cost per telephone and to leave the American Telephone & Telegraph systems' 1959 annual cost (and therefore, of course, the monthly wage cost) per telephone practically unchanged on the average from that which obtained in 1946. This composite result, showing an increase in wages and salaries of only some thirty-nine cents per telephone per year, or three cents a month, after thirteen years of wage increases, is set forth in Table I. The total dollar amounts of salaries and wages chargeable to operating expenses, and the number of telephones in service have increased by almost identical percentages, which of course explains the practically static wage-and-salary cost per telephone.

In view of this relatively unchanged cost and the fact that the companies' basic charges are generally quoted in terms of dollars and cents per telephone

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TABLE I—SALARIES AND WAGES CHARGED TO OPERATING EXPENSES PER AVERAGE COMPANY TELEPHONE: 22 BELL OPERATING COMPANIES

	1946	1959	% Increase over 1946
Salaries and Wages	$962,384,922	$2,374,275,701	146.71
Average Number of Company Telephones	23,754,909	58,055,164	144.39
Salaries and Wages, per Company Telephone per year	$40.51	$40.90	0.96
Salaries and Wages, per Company Telephone per month	$ 3.38	$ 3.41	0.96

Source: Derived from Companies' Annual Reports to the Federal Communications Commission. Company telephones, in the companies' terminology, include *main, private branch exchange,* and *extension* telephones. Company service and private lines telephones are excluded.

per month, it is difficult to understand the rationale behind the companies' oft-repeated emphasis upon increasing wage rates as a justification for the desired increased monthly telephone charges.

1946 and 1959 Costs Compared by Companies

Although the composite result shows little net change over the years in the wage-and-salary cost per telephone, it would be unusual if there were not a considerable variation as between the various companies. Table II was prepared with this possibility in mind. The figures are shown for each of the twenty-two American Telephone and Telegraph operating subsidiaries individually, in dollars and cents per company telephone per year, as well as in terms of the 1959 costs as percentages of the same costs experienced in 1946.

Eight of the companies show 1959 costs below those of 1946. These companies are, in alphabetical order: Chesapeake and Potomac Telephone Company

TABLE II—TOTAL SALARIES AND WAGES CHARGEABLE TO OPERATING EXPENSES PER COMPANY TELEPHONE, 1946 AND 1959: BELL OPERATING COMPANIES

Company	1946	1959	% 1959 of 1946
Bell Telephone Company of Pennsylvania	$33.69	$34.65	103%
Chesapeake & Potomac Telephone Company (D.C.)	41.88	45.06	108
Chesapeake & Potomac Telephone Company of Maryland	40.08	33.28	83
Chesapeake & Potomac Telephone Co. of Virginia	37.34	39.97	107
Chesapeake & Potomac Telephone Company of West Virginia	34.23	42.48	124
Cincinnati and Suburban Bell Telephone Company	23.17	28.20	122
Diamond State Telephone Company	28.20	37.73	134
Illinois Bell Telephone Company	49.12	45.40	92
Indiana Bell Telephone Company	37.65	40.55	108
Michigan Bell Telephone Company	34.96	38.75	111
Mountain States Telephone and Telegraph Company	37.78	43.91	116
New England Telephone and Telegraph Company	39.11	45.25	116
New Jersey Bell Telephone Company	46.99	39.67	84
New York Telephone Company	43.92	43.48	99
Northwestern Bell Telephone Company	34.69	40.11	116
Ohio Bell Telephone Company	31.86	35.49	111
Pacific Telephone and Telegraph Company	52.70	48.49	92
Southern Bell Telephone and Telegraph Company	39.27	36.53	93
Southern New England Telephone Company	36.30	37.46	103
Southwestern Bell Telephone Company	39.64	38.86	98
Wisconsin Telephone Company	40.30	36.82	91
Bell Telephone Company of Nevada	58.05	79.25	137

Source: Derived from Companies' Annual Reports (Form M) to the Federal Communications Commission.

of Maryland; Illinois Bell Telephone Company, New Jersey Bell Telephone Company, New York Telephone Company, Pacific Telephone and Telegraph Company, Southern Bell Telephone and Telegraph Company, Southwestern Bell Telephone Company, and the Wisconsin Telephone Company.

Some of the companies show costs substantially above the 1946 level but they are primarily the smaller operating units such as the Chesapeake and Potomac Telephone Company of West Virginia, the Cincinnati and Suburban Bell Telephone Company, the Diamond State Telephone Company, and the Bell Telephone Company of Nevada.

The 1959 wage and salary cost per company telephone ranges from a low of 83 percent of the 1946 cost (Chesapeake and Potomac Telephone Company of Maryland) to a high of 137 percent of the 1946 level (Bell Telephone Company of Nevada).

If one prefers to think in terms of the individual companies and their petitions, rather than in terms of the composite result, one would have to conclude that, insofar as these wage rate agreements alone are concerned, some of the companies would be entitled to telephone rate increases, but others should be chargeable with rate decreases, as their costs of wages and salaries per telephone have declined.

Intermediate Years

Although the American Telephone and Telegraph system's 1959 wage and salary cost per telephone may not, by and large, be higher than it was in 1946, there is another possibility: namely, that is was higher at some intermediate point. In that case, the wage rate increases, even if they do not currently justify telephone rate increases, may have warranted them at some earlier period.

To that end Table III is presented to show the wage and salary cost per telephone for each of the Bell companies for each of the years, starting with 1946 and carrying through 1959. The figures are given both in dollars and cents and in terms of relatives, 1946 being taken as 100. Here again, of course, the companies show some variety in their experience but four broad deductions seem to be in order, based on the tabulated figures.

First, whatever the justification may be for the claim that wage rate increases warrant telephone rate increases at certain times, it hardly applied prior to 1952. No company in the Table shows as much as a ten-percent increase in wage cost per station through the first four years, i.e., through 1950. Not until 1952 do increases of twenty percent or more appear.

Secondly, some of the American Telephone and Telegraph Companies have been almost uniformly below the 1946 cost level throughout the subsequent years: New Jersey Bell Telephone Company, Wisconsin Telephone Company and, less certainly, the Chesapeake and Potomac Telephone Company of Maryland.

Thirdly, seven of the companies (the three preceding companies plus Illinois Bell Telephone Company, Pacific Telephone and Telegraph Company, Southern Bell Telephone and Telegraph Company, and Southern New England Telephone Company) have at no time had a cost per telephone in excess of ten percent over the 1946 level. The New York Telephone Company has exceeded that margin only once (1956).

Fourthly, the cost figures have been declining in recent years, certainly since 1956.

TABLE III—TOTAL SALARIES AND WAGES CHARGEABLE TO OPERA... TELEPHONE PER YEAR AND IN TERMS OF IN...

COMPANY	1946		1947		1948		1949		1950	1951	
	$	Index	$	Index	$	Index	$	Index	$	$	Index
Bell Telephone Company of Pennsylvania	33.69	100	32.05	95	33.03	98	32.87	98	32.39	75	100
Chesapeake & Potomac Telephone Co. (D.C.)	41.88	100	40.97	98	41.30	99	41.97	100	40.00	12	103
Chesapeake & Potomac Telephone Co. of Maryland	40.08	100	38.94	97	39.39	98	38.62	97	35.78	04	95
Chesapeake & Potomac Telephone Co. of Virginia	37.34	100	35.92	96	35.14	94	35.67	96	34.68	43	103
Chesapeake & Potomac Telephone Co. of W. Va.	34.23	100	34.92	102	37.47	109	36.76	107	35.54	14	106
Cincinnati & Suburban Bell Telephone Company	23.17	100	24.03	104	25.20	109	25.04	108	24.79	13	104
Diamond State Telephone Company	28.20	100	27.10	96	28.52	101	28.06	100	27.54	26	107
Illinois Bell Telephone Company	49.12	100	49.37	101	51.20	104	49.29	100	47.66	14	102
Indiana Bell Telephone Company	37.65	100	39.45	105	39.17	104	38.51	102	39.37	87	114
Michigan Bell Telephone Company	34.96	100	33.57	96	35.99	103	37.03	106	34.72	60	105
Mountain States Telephone & Telegraph Company	37.78	100	38.35	102	38.44	102	39.99	106	39.36	04	114
New England Telephone & Telegraph Company	39.11	100	38.43	98	40.40	103	39.98	102	39.50	74	107
New Jersey Bell Telephone Company	46.99	100	45.94	98	48.56	103	45.19	96	43.55	75	93
New York Telephone Company	43.92	100	42.57	97	44.86	102	44.38	101	43.57	68	97
Northwestern Bell Telephone Company	34.69	100	32.91	95	34.17	98	34.62	100	34.59	44	105
Ohio Bell Telephone Company	31.86	100	30.58	96	32.13	101	31.44	99	30.78	32	105
Pacific Telephone & Telegraph Company	52.70	100	53.92	102	50.89	97	50.47	96	47.83	46	96
Southern Bell Telephone & Telegraph Company	39.27	100	36.78	94	37.18	95	36.25	92	36.35	02	99
Southern New England Telephone Company	36.30	100	37.08	102	36.57	101	35.11	97	34.23	54	98
Southwestern Bell Telephone Company	39.64	100	37.63	95	39.78	100	41.95	106	40.88	51	110
Wisconsin Telephone Company	40.30	100	40.16	100	41.34	103	39.61	98	35.51	81	89
Bell Telephone Company of Nevada	58.05	100	50.33	87	55.69	96	59.05	102	57.35	72	110

• Average, beginning and ending of calendar year.

Source: Derived from Companies' Annual Reports (Form M) to the Federal Communications Commission.

1953 and 1959 Costs Compared

If one examines the recent history, company by company, he will find that only five of the twenty-two operating companies had higher wage-and-salary costs per telephone in 1959 than in 1953 (Table IV); yet the rate increase applications continued to be filed by the companies throughout this period and wage rate increases continued to be emphasized.

Four of the five companies that had higher salary-and-wage costs per telephone in 1959 than in 1953 were but slightly above; and seven of the seventeen that were below the 1953 level were more than ten percent below that base period.

Relative Decline in Number of Employees

The number of telephones in service per American Telephone and Telegraph Company employee has increased greatly since 1946. In that year the Bell operating companies had, on the average, 393,734 employees and 23,754,910 company telephones, or 60 telephones per employee; in 1959 the average number of employees was 579,871 and the average number of telephones, 58,055,164, or just over 100 telephones per employee. This constituted a saving of around 385,000 employees compared with the number that the Bell companies would have had on their payrolls had the 1946 ratio of one employee for every sixty telephones continued to be the fact.

These savings in payroll and associated costs represented huge offsets to the wage rate increases. If rate cases are to be decided by shibboleths, such as the number of wage increases granted, inflation, attrition, etc., instead of by the best evidence as the lawyers like to say, i.e., by the actual proper figures adjusted maybe for

NSES PER COMPANY TELEPHONE,* IN DOLLARS AND CENTS PER
BERS (1946=100): BY COMPANIES: 1946-1959

1950		1951		1952		1953		1954		1955		1956		1957		1958		1959	
$	Index	Index		$	Index	$	Index	$	Index	$	Index	$	Index	$	Index	$	Index	$	Index
32.39	100	75	100	35.92	107	37.78	112	38.38	114	39.30	117	40.25	119	38.43	114	36.17	107	34.65	103
40.00	103	12	103	45.08	108	45.31	108	46.19	110	46.86	112	47.41	113	45.95	110	44.60	106	45.06	108
35.78	95	94	95	41.29	103	41.05	102	40.85	102	40.53	101	39.74	99	37.33	93	34.17	85	33.28	83
34.68	103	43	103	42.26	113	40.79	109	41.71	112	41.55	111	41.00	110	40.35	108	39.95	107	39.97	107
35.54	106	14	106	39.40	115	41.15	120	42.61	124	43.66	128	46.37	135	45.64	133	41.90	122	42.48	124
24.79	104	13	104	25.76	111	27.38	118	28.24	122	28.89	125	30.02	130	28.21	122	28.18	122	28.20	122
27.54	107	26	107	33.85	120	37.00	131	39.22	139	40.23	143	42.77	152	41.17	146	39.44	140	37.73	134
47.66	102	14	102	51.60	105	54.02	110	54.00	110	53.23	108	53.40	109	49.93	102	47.19	96	45.40	92
39.37	114	87	114	45.37	121	47.52	126	47.19	125	46.98	125	46.46	123	43.38	115	40.68	108	40.55	108
34.72	105	60	105	38.82	111	42.26	121	40.80	117	42.54	122	43.56	125	40.98	117	39.24	112	38.75	111
39.36	114	04	114	47.94	126	48.68	129	48.04	127	49.00	130	48.82	129	46.84	124	45.28	120	43.91	116
39.50	107	74	107	44.89	115	47.07	120	50.80	130	52.03	133	52.18	133	49.18	126	46.69	119	45.25	116
43.55	93	75	93	45.54	97	47.05	100	45.99	98	45.15	96	43.76	93	44.11	94	41.41	88	39.67	84
43.57	97	68	97	44.55	101	45.46	104	46.39	106	47.34	108	48.93	111	45.79	104	44.53	101	43.48	99
34.59	105	44	105	40.09	116	42.27	122	42.20	122	42.33	122	42.24	122	41.95	121	41.36	119	40.11	116
30.78	105	52	105	35.64	112	37.17	117	36.46	114	37.79	119	39.58	124	37.34	117	35.87	113	35.49	111
47.83	96	46	96	53.95	102	55.49	105	54.35	104	55.80	106	56.25	107	53.92	102	50.88	97	48.49	92
36.35	99	02	99	41.51	106	41.44	106	40.52	103	41.16	105	42.58	108	39.86	102	37.66	96	36.53	93
34.23	98	54	98	35.92	99	37.14	102	37.43	103	39.02	107	39.22	108	38.72	107	37.06	102	37.46	103
40.88	110	51	110	45.29	114	45.22	114	44.67	113	44.04	111	44.20	112	42.08	106	39.55	100	38.86	98
35.51	89	81	89	38.10	95	39.26	97	38.39	95	38.13	95	39.32	97	38.21	95	36.90	92	36.82	91
57.35	110	72	110	68.32	118	70.09	121	69.28	119	75.34	130	73.37	126	72.83	125	78.56	135	79.25	137

known impending changes, then in justice relative declines in numbers of employee, declines in wage costs as a percentage of revenues, as well as changes in the composition of the telephone plant itself, with all that that implies, ought

TABLE IV—TOTAL SALARIES AND WAGES CHARGEABLE TO OPERATING EXPENSES, PER COMPANY TELEPHONE, 1953 AND 1959: BELL OPERATING COMPANIES

Company	1953	1959	% 1959 of 1953
Bell Telephone Company of Pennsylvania	$37.78	$34.65	92%
Chesapeake & Potomac Telephone Company (D.C.)	45.31	45.06	99
Chesapeake & Potomac Telephone Company of Maryland	41.05	33.28	81
Chesapeake & Potomac Telephone Co. of Virginia	40.79	39.97	98
Chesapeake & Potomac Telephone Company of West Virginia	41.15	42.48	103
Cincinnati and Suburban Bell Telephone Company	27.38	28.20	103
Diamond State Telephone Company	37.00	37.73	102
Illinois Bell Telephone Company	54.02	45.40	84
Indiana Bell Telephone Company	47.52	40.55	85
Michigan Bell Telephone Company	42.26	38.75	92
Mountain States Telephone and Telegraph Company	48.68	43.91	90
New England Telephone and Telegraph Company	47.07	45.25	96
New Jersey Bell Telephone Company	47.05	39.67	84
New York Telephone Company	45.46	43.48	96
Northwestern Bell Telephone Company	42.27	40.11	95
Ohio Bell Telephone Company	37.17	35.49	95
Pacific Telephone and Telegraph Company	55.49	48.49	87
Southern Bell Telephone and Telegraph Company	41.44	36.53	88
Southern New England Telephone Company	37.14	37.46	101
Southwestern Bell Telephone Company	45.22	38.86	86
Wisconsin Telephone Company	39.26	36.82	94
Bell Telephone Company of Nevada	70.09	79.25	113

Source: Derived from Companies' Annual Reports to the Federal Communications Commission.

also to be forcefully presented for the consideration of the regulatory commissions.

Decreased Salary-and-Wage Cost per Dollar of Revenue

Since the Bell companies' annual reports to the Federal Communications Commission show the amounts of salaries and wages charged to operating expenses, it might be expected that these savings (by reason of the relative decline in the number of employees) would show up in a decline of such expenses in relation to the companies' total revenues. They do.

In 1946 salaries and wages charged to operating expenses by the 22 operating companies represented 52 percent of the total revenues; in 1959, only 34 percent (Table V). In 1946 only two companies, the Cincinnati and Suburban Bell com-

TABLE V—Salaries and Wages Charged to Operating Expenses as a Percent of Revenues.

Company	1946			1959		
	Total Operating Revenues	Salaries and Wages Charged to Operating Expense	Ratio of Salaries and Wages to Total Operating Revenue	Total Operating Revenues	Salaries and Wages Charged to Operating Expense *	Ratio of Salaries and Wages to Total Operating Revenue
	(*dollars*)	(*dollars*)	%	(*dollars*)	(*dollars*)	%
Bell Telephone Co. of Pennsylvania.	115,307,402	61,875,691	53.66	397,876,215	140,575,000	36.63
Chesapeake & Potomac Telephone Company (D.C.)	29,446,426	15,715,650	53.37	63,886,347	27,423,000	42.92
Chesapeake & Potomac Telephone Company of Maryland	33,078,370	17,886,104	54.07	133,259,330	39,958,500	29.99
Chesapeake & Potomac Telephone Company of Virginia	27,391,709	14,013,000	51.16	119,920,935	38,556,000	32.15
Chesapeake & Potomac Telephone Company of West Virginia	13,176,746	7,215,358	54.76	53,458,606	19,063,000	35.66
Cincinnati and Suburban Bell Telephone Company	16,702,560	6,099,738	36.52	50,656,267	15,628,000	30.85
Diamond State Telephone Company	4,935,517	2,146,092	43.48	23,361,658	7,693,000	32.93
Illinois Bell Telephone Company	158,095,085	97,635,303	61.76	507,745,694	173,229,430	34.12
Indiana Bell Telephone Company	27,991,727	14,895,014	53.21	106,738,360	38,031,128	35.63
Michigan Bell Telephone Company	91,650,861	44,626,607	48.69	296,434,415	109,309,000	36.87
Mountain States Telephone and Telegraph Company	54,401,764	29,193,563	53.66	287,525,772	95,344,000	33.16
New England Telephone and Telegraph Company	128,913,945	68,237,472	52.93	380,023,379	141,439,015	37.21
New Jersey Bell Telephone Company	91,229,897	50,721,120	55.60	327,244,105	107,461,000	32.84
New York Telephone Company	333,543,467	150,196,820	45.03	1,006,289,916	337,000,000	33.49
Northwestern Bell Telephone Company	72,180,218	39,901,627	55.28	265,485,678	92,370,000	34.79
Ohio Bell Telephone Company	85,987,288	38,491,894	44.76	281,056,233	90,225,628	32.10
Pacific Telephone and Telegraph Company	153,086,219	91,051,118	59.48	1,026,546,165	348,747,000	33.97
Southern Bell Telephone and Telegraph Company	155,550,901	80,525,960	51.77	767,111,440	239,280,000	31.19
Southern New England Telephone Company	37,284,525	19,924,814	53.44	127,882,727	44,449,000	34.76
Southwestern Bell Telephone Company	180,890,639	89,991,855	49.75	735,675,479	225,185,000	30.61
Wisconsin Telephone Company	32,067,426	20,922,560	65.25	121,848,818	39,306,000	32.26
Bell Telephone Company of Nevada	4,456,436	1,117,562	25.08	14,160,211	4,003,000	28.27
Totals	$1,847,369,128	$962,384,922	52.09%	$7,094,187,750	$2,374,275,701	33.85%

* These amounts are as reported by the companies. In some cases the figures were partly estimated.

Source: Form M Reports to the Federal Communications Commission.

pany and the Bell Telephone Company of Nevada, were *under* 40 percent; in 1959 only one company, the Chesapeake and Potomac Telephone Company (D.C.) was *over* 40 percent. While total revenues of the Bell companies rose 280 percent over the thirteen year period, total salaries and wages charged to operating expenses rose only 147 percent.

The nearly-unchanged cost of salaries and wages per telephone as between 1946 and 1959, the very considerable decline in such expenses since 1953, and the sharp drop since 1946 in the percentage that such expenses constitute of total revenues, should raise serious doubts as to the appropriateness of granting nearly automatic telephone rate increases as an accompaniment of newly-negotiated wage contracts.

The situation is hardly parallel to the semi-automatic, or fully automatic retail increases that in some jurisdictions are permitted to follow an increase in wholesale gas rates. In the case of the telephones there are, as has been indicated, off-setting factors and unless the concurrent increase in the number of telephones in service, with its cost-reducing effect upon the average cost of service per unit, and the declining trend in the number of employees are taken into account, the wage rate adjustments may turn out to be very one-sided and wooden.

1958 a Stand-out Year

The year 1958 is a particularly good example of how far from balancing the factors (to paraphrase the United States Supreme Court's Hope case[1] phraseology) would be the granting of rate increases just because wage rates have increased. Considering only the number of employees and the wage rates and ignoring the cost-reducing effect of the rapid increase in the number of telephones in service, it will be obvious that a reduction in the number of employees of some 7½ percent, as was experienced by the Bell companies in that year, will cancel the effect of wage rate increases up to 7½ percent. If the total wage bill is therefore kept constant,[2] the simultaneously *increased number* of telephones in service will not be subjected to *any* salary and wage cost or, if one prefers, he may consider that the *average* salary and wage cost per telephone will surely decline.

In neither case does a proper base appear to be laid for a telephone rate increase, despite the undeniable fact that a wage rate increase may have been negotiated, since the reduction in the number of employees or the increase in the number of telephones being serviced relative to the number of employees, are equally undeniable facts.

Three Recent Examples

The Southwestern Bell Telephone Company recently successfully resisted an Arkansas Public Service Commission's show-cause order calling upon the com-

[1] *Federal Power Commission.* v. *Hope Natural Gas Company,* 320 U.S. 591, at 603 (1944).

[2] This is by no means an impossibility even in the face of rapid growth in the number of telephones in service. Ten of the Bell companies reported *lower* total dollars of salaries and wages charged to operating expenses in 1958 than in *either* 1957 or 1956. They were: the Bell Telephone Company of Pennsylvania; the three Chesapeake and Potomac Telephone Companies of District of Columbia, Maryland and West Virginia; Illinois Bell Telephone Company; Indiana Bell Telephone Company; Michigan Bell Telephone Company; New England Telephone and Telegraph Company; Ohio Bell Telephone Company; and Southwestern Bell Telephone Company. New Jersey Bell Telephone Company and Pacific Telephone and Telegraph Company were lower in 1958 than in 1957 but higher than in 1956. New York Telephone Company was lower in 1958 than in 1956 but higher than in 1957. The 1958 total for the twenty-two companies, as reported by them, was about one-tenth of one percent above the 1957 total and one and a half percent above that of 1956.

pany to present reasons why its rates should not be reduced.[3]

Noted by the Commission in its order summarizing the Company's defenses were the post-1953 wage rate increases. As listed in the trade press the six-point summary began as follows: "(1) Five wage increases have been given to employees since 1953, the last year it got an increase in rates."[4] Reference to Table III shows that Southwestern's wage-and-salary cost per telephone in 1953 was $45.22 and, in 1958, $39.55 (possibly the latest full year for which figures were available to the Commission at the time of the hearing). The figure for 1959, as shown in the table, is $38.86. The 1958 and 1959 dollar amounts are 87 percent and 86 percent, respectively, of the 1953 cost figure.

In the recent *Long Lines Private Lines case,* Docket 11,645, before the Federal Communications Commission, the American Telephone and Telegraph Company, in purporting to make its presentation "more current," revised various expenses merely by adjusting for the change in wage rates at between June 30, 1955 and September 30, 1957. Such ratios of changes in wage rates for the individual Bell operating companies, or associated companies, as the American Telephone and Telegraph Company refers to them, were applied "to the wage portion of the expenses" in various accounts "to obtain wages adjusted to September 30, 1957 levels."[5]

Not a word was said about any simultaneous changes in number of employees, or number of employees in relation to the number of telephones in service (or in relation to revenues), although the American Telephone and Telegraph Company's Annual Report to Stockholders for 1957 shows a 13 percent increase in number of telephones between the end of December 1955 and the end of 1957. The number of employees during that same period increased by less than half that rate. The necessary result of the greater increase in number of telephones than in number of employees was that the American Telephone and Telegraph Company had fewer employees in 1957 per 1000 telephones than it had in 1955 but the Company did not find any adjustment for this fact necessary in revising its presentation to make it (as the Company said) "more accurately" reflect current conditions!

The recent Southern Bell case[6] in Louisiana is another interesting example of the telephone companies' one-sided approach to the problem. This company sought to include in its claimed Louisiana intrastate expenses over a half million dollars as the result of a wage increase that became effective some four and a half months after the close of the test year. The Commission pointed out that the Company did not offer any evidence in respect to the increased telephone revenues that had simultaneously

[3] *In re Southwestern Bell Telephone Company,* 34 PUR (3d) 176 (1960).

[4] *Telephony,* March 12, 1960, p. 38.

[5] American Telephone and Telegraph Company Exhibit, 17A, p. 10, line 12. A spot check of the Northwestern Bell Telephone Company's revenue accounting experience, in this case, showed that, using the Company's own exhibit (Ex. 53G, PLS 12 and PLS 27) without any adjustment whatever, a 13.1-percent wage rate increase was accompanied by a dollar increase in wages not of 13.1 percent, the increase in the wage rate, but of only 9.1 percent (from $416,213 to $454,097). The number of revenue accounting employees declined absolutely, from 1429 to 1381, during the 27-months period. The 9.1-percent figure includes no adjustment for the continued, simultaneous growth in number of stations served. Such adjustment would still further diminish the actual burden of wage rate increase per company telephone. The total annual wages and salaries per company telephone for Northwestern Bell Telephone Company actually fell from $42.33 in 1955 to $41.95 in 1957, as shown in Table III.

[6] *Ex parte Southern Bell Telephone and Telegraph Company,* 26 PUR (3d) 55, at 106.

resulted from the increased number of telephones in service.

Neither, apparently, did the Company offer any evidence of the decline in number of employees which had set in on a national scale in August 1957[1] and continued without interruption in succeeding months through December 1958, at least. Southern Bell itself reported a reduction from 70,450 employees to 65,631 for the calendar year 1958, or about seven percent, for its total operations in the nine southern states which it serves.

The Company's official reports to the Federal Communications Commission show that it gained 8 percent in average number of telephones in service in 1958 (from 5,594,243 to 6,052,856) while its total salaries and wages charged to operating expenses increased by a little over 2 percent (from $222,993,000 to $227,960,000). The result was a drop in the annual salary-and-wage cost per telephone from $39.86 to $37.66, or five and a half percent. (See Table III for declines by individual companies.)

Effect on American Telephone and Telegraph Company's Per Share Earnings

The granting of telephone rate increases, on the assumption that wage rate increases needed to be offset although the wage costs per telephone have actually been declining, may very well explain the fact that the American Telephone and Telegraph Company's earnings per share have not been merely stabilized by such compensatory adjustments but have risen from $9.42 a share in 1946 to $15.66 on a comparable basis as of December 31, 1959.

The book value of the stock at the end of 1959 was $167.50 (still on a comparable basis) but the rates the subscribers were being required to pay caused the stock to sell at the equivalent of $239.25 (now over $300.00 allowing for the 3-1 stock split). Even this $71.75 per share excess value, as of December 31, 1959, represented a market value of over five billion dollars beyond the $11,982,426,000 of actual investment represented by the formerly outstanding seventy-million-plus shares. The current December excess market value is over nine billion dollars.

In conclusion, two not unrelated questions seem to be in order. First, whether the subscribers have a duty to make such a contribution to the American Telephone and Telegraph Company stockholders or only a duty to maintain the financial integrity of the investment without any donation on their part. Second, whether illusory wage cost increases are being used to justify such forced contributions.

[1] As disclosed in *In re American Telephone and Telegraph Company et al.*, FCC Docket 11645, Exhibit 428, p.1, derived from *Bell System Consolidated Reports* MR No. 1, CR 51, Sheet 2, as filed with the Federal Communications Commission.

United Nations Conference on New Sources of Energy

The Security Council of the United Nations reached the conclusion in 1959 that research in the utilization of practical applications of solar energy, wind power and geothermal energy had reached a stage at which the pooling of the results achieved could, through an international conference, yield especially interesting results for areas which have a shortage of conventional energy resources. Such a conference will be held in Rome, Italy, at the invitation of the Italian Government from August 21st to 31st, 1961. This meeting, the United Nations Conference on New Sources of Energy, will examine practical problems and experience in these fields, with special reference to the problems of the less developed countries.

Land Reform in Iraq: Economic and Social Implications

By RASOOL M. H. HASHIMI* *and* ALFRED L. EDWARDS**

THE agrarian problem is as old as history itself but it was only during the past two or three centuries that a significant reform in freer land tenure and wider distribution of ownership has been achieved. This century in particular has witnessed extensive and active demands for land reform programs in Europe, Asia, and other parts of the world.[1]

The concept of agrarian reform has undergone evolutionary changes as a result of political and institutional developments. The more recent institutional changes in many parts of the world, initiated by the spread of constitutional and democratic forms of government and growth of the political power of the common people, are a consequence of increasing educational opportunities and higher standards of living.[2] These changes have led to the abandonment of old narrow concepts of agrarian reform as little more than "opportunity of ownership," and to the rise of new forms of state organization and new concepts of property rights. The present definition of agrarian reform covers a wider range of social and economic problems and institutions than did the older concepts.

"Agrarian reform in its modern setting is concerned with improvement of agricultural economic institutions, i.e., agricultural land ownership and tenancy, land rents, taxation of agricultural land or income from land, and also agricultural credit and producer marketing. Agricultural technology, physical problems of land utilization and development, conservation of resources, methods and levels of productivity, and problems of rural industries will be included insofar as they are relevant to the institutional problems enumerated above."[3]

Moreover, the present concept of agrarian reform is more relevant to underdeveloped areas and is more significantly related to economic development and social change. It extends somewhat beyond the conventional economic field and deals with such essential problems as social classes, legal and political powers, training, education, and maintenance of civil order. The basic aims and policies of agrarian reform movements in most of the underdeveloped countries cannot be limited to increasing the productivity and efficiency of the economy by land and income redistribution and improving the methods of production. Such programs must also provide for social justice and equality, and minimum levels of living. Schools, hospitals, roads, housing, law enforcement, and protection of life and property in the rural areas are essential requirements basic to reform.[4]

The modern concept carries with it wider distribution of ownership rights and freer tenure conditions. Land distribution to landless cultivators is a necessary condition in any reform, as it

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[1] V. Webster Johnson and Raleigh Barlowe, *Land Problems and Policies* (New York, New York: McGraw-Hill Book Company, 1954), p. 374.

[2] Kenneth H. Parsons, "Basic Elements in the World Land Tenure Problems," *Journal of Farm Economics*, May 1956, pp. 430–437.

[3] From a statement prepared by the Inter-Agency Committee on Land Reform Problems in the United States, *op. cit.* p. 375.

[4] Raleigh Barlowe, "Land Reform and Economic Development," *Journal of Farm Economics*, May 1953, p. 180.

gives the producer more security of expectation and creates an incentive for greater productivity and for investment. While this is a necessary condition, it is not sufficient. The prospect for the long-run improvement of the lot of the individual farmer may not be high if no provision is set to take care of such basic requirements for prosperous farming as marketing facilities, credit availability, technical advice and extension service, agricultural machinery and fertilizer, and a host of other things needed to operate a modern farm business. If the reform program is not comprehensive and inclusive in all these aspects but is restricted in providing opportunity of ownership, the helpless new owners will soon become prey to their own ignorance and will lose their newly acquired titles to the speculators and money-lenders; or lack of good management and insufficient capital for the necessary investment and conservation will force them to abandon their land.

In 1952 Egypt enacted an Agrarian Reform Law "aiming at the growth of the national economy, greater stability and productivity, the reorganization of land ownership, the protection of the cultivators' [fellahin] interests, and the attainment of social justice."[5] The economic significance of this law is evident in that it represented an attempt to reorganize the available productive resources by the redistribution of land and the regulation of the productive organizations (farms) in a different pattern, a pattern that the originators hoped would be conducive to an increase in national product and human welfare.

Six years later, in 1958, similar reform action was taken in the neighboring Arab state of Iraq. The impact of the cultural, economic, and political relationships between these two countries had a great deal to do with molding the two revolutions in the same pattern. The Iraqi Agrarian Reform Law had very much the same objectives and indeed very similar content.

The recent agrarian reform programs in the Middle East can be characterized as being ambitious and inclusive in adopting deep-rooted policies that attempt to solve the chronic agrarian problems by far-reaching measures, and in dealing with the basic socio-economic conditions and problems of the peasants. They set as their objectives new patterns in the methods of production and improvements in the social and economic organizations of the farm people. These changes in the Middle East reflect long-existing conflicts between the ideas and inspirations of the newer and the older generations (incompatible sets of economic and social organizations that have been unable to solve current problems). These reform programs represented a bold break-through in the old and rigid systems. They may constitute a serious step toward remodeling the social order and rebuilding it on a plane of greater social and economic equality at a higher level of human welfare. The success or failure of these reform movements may have great repercussions and influence on other countries in that sensitive and unstable part of the world.

The aim of this paper is to review the land tenure system in Iraq and analyze the possible economic and social changes that will result from the implementation of the more recent agrarian reform.

[5] Sayed Marei, *Agrarian Reform in Five Years* (Cairo, Egypt: Dar El—Kahira Printing Press, 1957) p. 49, Arabic. For an analysis of the land reform program in Egypt see Kenneth H. Parsons, "Land Reform in the United Arab Republic," *Land Economics*, November 1959, pp. 319–326; also Gabriel Saab, "Egyptian Agrarian Reform," *Middle East Forum*, July 1960, p. 15 (on the impact of the Agrarian Reform in Egypt after 1952).

Historical Background

The remains of the irrigation works of the Abbasid period in Iraq indicate that this area had been a prosperous land with a flourishing agriculture that could support a much larger population than the present one. However, the system of land tenure and land ownership during the Abbasid epoch was more like a medieval feudal system where the khaliphs and their civil and military officers owned the land, collected and shared the revenues and recruited the farmers in time of war. But the khaliph also made grants of the land to his officers for the purpose of reclamation, and also sold land to others.[6]

The prosperity of the country and its location at the crossroads of caravan commerce frequently tempted marauding invaders to attack this land. Early in the eleventh century, toward the end of the Abbasid period, Iraq suffered heavily from various invaders. The enemy forces destroyed many of the accomplishments of the "golden" Abbasid era. The irrigation works were damaged and the feeder canals were gradually blocked by a lack of dredging. The regular flow of the river was disrupted, frequently changing its course, resulting in the depredation of whole provinces. The process of destruction was culminated by the Mongolian invasions in the thirteenth and fifteenth centuries and the Ottoman-Persian wars of the fifteenth to the seventeenth centuries. By the eighteenth century the country was denuded of both its cultivation and its population.[7]

During the Ottoman rule, Iraq went through a period characterized by unusual confusion and haphazardness in the affairs of state. The land was fought over and alternately held by different tribes, or was allotted to government officials and powerful chieftains in order to win their loyalties and insure collection of taxes. The first explicit legal basis for land ownership was established as late as 1858. The Ottoman Land Law of 1858 defined the right of use and transfer of state land [*Miri Sirf*] and aimed at classifying and registering all lands as: (a) private property; (b) religious *Wakuf* land held in public and private trusts; (c) *Miri Sirf*, or pure state land; (d) Musha 'a, or public domain; and (e) dead uncultivatable land.[8] This law remained the basic statute for about a century (until the use and transfer of state lands was changed by Law No. 40 of 1951, which became effective in 1953.) Except for a short period, from 1869 to 1871, under Midhat Pasha's governorship of Baghdad,[9] the Ottoman rulers were not powerful enough to apply their land law. The people of Iraq at that time also did not react favorably to land registration because of their fear of military draft and tax payment. The old confusion in land ownership and use continued to be the main feature of social and economic life in Iraq.[10]

[6] Hassan Mohammad Ali, *Land Reclamation and Settlement in Iraq* (Baghdad, Iraq: The Baghdad Printing Press, 1955), pp. 54–55.

[7] Salih Haider, "The Land and Tribe in Iraq," A paper presented to the Food and Agriculture Organization of the United Nations Center on land problems in the Near East, Salahudin, Iraq, October 1955; John Kenneth Galbraith in *The Affluent Society* (Boston, Massachusetts: Mifflin Company, 1958), pp. 22–23, observed "the economic life of the Middle East never recovered from the imaginative and highly coordinated destruction, pillage, and massacre of Genghis Khan."

[8] Mohammed Ali, *op. cit.*, pp. 57–58.

[9] "Midhat Pasha was a prominent statesman and constitutional reformer in Turkey. In his short tenure in Iraq, he initiated many reforms. Various schemes of irrigation, communications, river stream navigation, public education, better provincial administration and public works, and even industries were started or planned." Haider, *op. cit.*

[10] ". . . . The Ottoman administration failed in its attempts at land settlement, and more than anywhere else it failed in Iraq. Two causes, each connected with the other, were responsible for its lack

Toward the end of the nineteenth century (1883) another attempt was made by the government in the direction of stabilizing the tenure system and improving agriculture. About 30 percent of the land, including the most cultivatable and fertile land, was acquired by purchase, gift, and reversion to the Crown Estate of Sultan Abdul Hamid II. The land was put under a special government department that was responsible for its management. This new system gave the farmers a more stable tenancy and higher income. In 1908 the Crown Estates were reverted to public ownership and designated as land to be distributed among the members of the tribes directly as individual private property rather than in common tribal ownership. This was an attempt to establish a permanent basis for settling land ownership and to check the powers of the sheiks of the tribes.[11]

During the period of the British occupation of Iraq that started in 1917 the tendency was to encourage and revive the disintegrating tribal system. The power of the tribal chieftains was enhanced and their status and privileges were sanctioned by the enactment of a primitive tribal "law." The code legalized and regulated the personal and property affairs of the rural areas, according to the prevailing and accepted codes and customs of each tribe. The semi-feudal tenure system headed by the tribal sheiks was revived for political reasons.[12] Women were generally deprived from land inheritance in the tribal convention. The primogeniture system was applied to men. In some districts the sheiks levied a special tax in kind from the meager share of the farmer to provide for the management and upkeep of the common guest house. In case of intertribal dispute the claims were settled by money, cattle, and even women, collected from clans or tribes' members.[13]

When Iraq resumed its semi-independent identity as a member of the League of Nations in 1932 the new government inherited a great encumbrance from the past. It took charge of a tribal and urban people that had an extremely low level of literacy and primitive productive methods. The population was heavily dependent on agriculture and a little medieval craftmanship for their livelihood.[14] The social and economic ties were basically family and tribal ones and the experience of citizenship was hardly recognized by the majority of the people. The land, the main source of livelihood and power, was left without survey or classification, the soil deteriorated, and the land salinated or reverted to desert. Landholdings suffered from conflicting claims and unsettled legal rights. However, the economic potentiality for

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of success in Iraq: physical-geographical and social." Gabriel Baer, "The Agrarian Problem in Iraq," *Middle Eastern Affairs*, December 1952, p. 381.

[11] Doreen Warriner, *Land Reform and Development in the Middle East—A Study of Egypt, Syria, and Iraq* (London, England: Royal Institute of International Affairs, 1957), p. 144.

[12] Mohammad Ali, *op. cit.*, pp. 61–62. Other writers, however, absolve the British of bad intentions and explain that their inclination "was to envisage land settlement in terms of individual holdings of some sort or the other" and put the whole blame on the landlords and shieks who used their power and influence to preserve their interest and prestige. Handley V. Cooke, *Challenge and Response in the Middle East: the Quest for Prosperity, 1919–1951* (New York, New York: Harper and Brothers, 1952), p. 176.

[13] This law was recognized by the national government that succeeded the British until it was abolished by the regime that took over in 1958. For the sharing of the crop between landlord and farmer see Hashim Jawwad, *Muqeddima fi Kiyan al-Iraq al-'Ijtima'i* 1946, p. 48. (Cited by Baer, *op. cit.* pp. 388-389.)

[14] ". . . . Even today about 60 percent of the population get their living from agriculture . . . . In the field of manufacturing industries and handicraft less than half of the man-power employed is engaged in handicraft proper." Carl Iverson, *A Report on Monetary Policy in Iraq* (Baghdad: The National Bank of Iraq, 1954), pp. 70–71.

growth and the prospects of the country were hardly obscure. Although some achievements in land reclamation, irrigation projects and flood control were made by the national government, the benefits accruing to the tillers were small. "Witness what has happened [in Iraq] during the last 50 years or so. Irrigation has been expanded materially, mainly through pump installation, and total agricultural output has been increased tremendously; but the peasants remained landless and impoverished."[15]

The existing legal status of land in 1932 provided the government with an excellent opportunity to build up a stable and promising land tenure system that could have been a sound basis for a stable and growing social and economic order. The land system was still fluid and the subdivision of state land to small landholders was legally possible. According to Doreen Warriner, "When the new state of Iraq came into existence, the state was in law the largest landowner . . . only a fraction of the cultivated land was held, somewhat uncertainly, on Tapu [Ottoman tenure], while the rest was held on no legal basis at all. In addition to the state's nominal claim to ownership of all land, the new state of Iraq became the owner of its former Ottoman Crown estate."[16] But most of the development programs undertaken were of the irrigation and flood-control type that added more area to the cultivable acreage. The engineer's approach dominated the thinking of those who were concerned about the future of the country. "Yet, the immediate need is not to add to the area cultivated, but to get better cultivation on land already in use, particularly in the irrigation zones."[17]

The influence of the tribal chieftains, who gained extra stature as members of parliament, and the presence of British advisors who continued to influence national government policies supported land policies and title settlement that continued the trend toward concentration and excessive holdings in large estates. Once again the new state repeated the errors of its predecessors, following the path of least resistance. Power and favoritism were the deciding factors in land acquisition. It was not an unusual practice for the title of some lands to be held alternately by rival families, depending on their political loyalties. The introduction of irrigation and the opening of the outside market for Iraqi crops by steamships and railroads made tribal leaders press for surveys and title settlement in contradiction to their actions during the Ottoman rule. It added a new and genuine economic motive for acquiring title to large areas of land.[18] At the same time, small farmers and tribe members were gradually stripped of their communal rights in land and reduced to the status of serfs.

The Law for Settlement of Land Rights enacted in 1932 inaugurated a cadastral survey and granted titles and Tapu tenure (old Ottoman tenure) or Lazma grant (permanent lease) ". . . . to people who could demonstrate that they had productive use of land within

[15] Afif Tanous, "Land Reform: Key to Development and Stability of the Arab World," *The Middle East Journal*, Winter 1951, p. 11.

[16] Warriner, *op. cit.*, pp. 143–144.

[17] *Ibid*, p. 116. A serious shortcoming of the irrigation projects in Iraq was the neglect of drainage canals, for without them the soil salts up. The High Irrigation Development Committee report of 1949 stated that almost 60 percent of the flow-irrigated land had been seriously affected by salt. Twenty to thirty percent of the cultivable land has been abandoned in the last few decades and the yield on the remaining lands has declined by thirty to fifty percent. Mohammad Ali, *op. cit.*, p. 31.

[18] Warriner, *op. cit.*, p. 136.

the previous fifteen years. In practice it has been possible to obtain title on presentation of proof that a crop was produced on land in one year, and the land settlement committee have occasionally accepted even more tenuous proof of cultivation."[19] Up to 1955 about 38 percent of the whole country and about one-sixth of the state land was granted in Lazma tenure to pump owners. Two provinces, Amarah and Muntafik, were excluded from the application of the land settlement law of 1932. Both provinces have unusually large holdings and each was treated separately with regard to the settlement.[20] Yielding to the pressure of all-powerful chieftains and other influential groups the state granted the best available land in the country freely or for a nominal price. What was left to the state was potentially cultivable if proper irrigation schemes were available.

In a country where the major economic decisions are closely tied to social structure and are performed largely through a legal and governmental machinery that is dominated by the landlord class, one can hardly expect significant distribution of land holdings that favor and encourage small ownership. Such a policy might jeopardize the economic and social position of the landlords, deprive them of their extensive power, and even "spoil their peasants," who would see the advantage of such schemes and ask for a higher share or seek better alternatives. Nevertheless, after World War II because of inside pressure from the newly formed and agitating middle class, and outside pressure in the form of foreign expert advice, fear of communism, and later the introduction of the extensive land redistribution in neighboring Egypt, moderate land distribution programs were initiated.[21] The increase in oil revenue in 1950 helped to finance irrigation projects and reclamation of *Miri Sirf* land. It is to be noted, however, that the enactment and passing of a bill in the parliament advocating land distribution somehow conditioned direct benefits to the landlord members who secured a good share of the newly reclaimed land or water rights to the old property.[22] Nevertheless, the land distribution schemes carried on by the postwar governments in Iraq were movements in the right direction. From the start they provided convincing evidence of the urgent need for such action. There were 50,000 applicants for the 1,200 tracts that were distributed in the Dujayla Settlement in 1945.[23]

[19] *The Economic Development of Iraq* (The International Bank for Reconstruction and Development, 1953), p. 6. Referring to Law No. 28 of 1933, "Law, Governing Rights and Duties of Agriculturalists."

[20] Warriner, *op. cit.*, pp. 150–154. Twenty-nine holdings in Amarah covered 20,000 meshara (12,000 acres) or more. Seven of these holdings are over 50,000 meshara (30,000 acres); four holders hold most of the cultivable land in the province. In Muntafik province there are twelve holdings that exceed 20,000 meshara; half of the holdings are in Tapu and claimed by one family.

[21] Small-scale pilot projects distributing state domains among landless peasants were initiated by enactment of Law No. 23 of 1945 and extended to other areas in 1950. The Dujayla plan made a good start and "fulfilled one of the chief requirements of the pilot project by exposing a major blunder. Proper drainage was not provided, and in part of the land salting resulted in its becoming useless." "Agrarian Reform Expanded in Iraq," *The New York Times*, November 5, 1950, cited by Hendley V. Cooke, *op. cit.*, p. 188.

[22] Warriner, *op. cit.*, pp. 160–161.

[23] Up to 1956 there were 7,196 families resettled on the *Miri Sirf* land. Since that time another 12,727 families have been assigned to newly reclaimed state land. The Development Board in 1957 planned a settlement program for an additional 5,000 families during the following five years. The total number of farmers in Iraq is estimated at 750,000-1,000,000. Thomas Balogh, *Policy of Economic Development in Iraq* (Baghdad, Iraq: Al Thaqafa Aljedida Bublicalion, 1958), pp. 70–71. (Assistant and Translator, Mohammad Hassen Salman, Arabic.) More recent estimates of the number of farmers are given in *The Iraqi Revolu-*

Land settlement in the postwar era started as a demonstration and experiment and depended to a large extent on United Nations' recommendations and other foreign advice. Such agencies contributed much assistance in the research and technical fields of land reclamation, soil preservation, rural development and flood control. This form of assistance could serve as a bench mark for policy makers but should not be expected to solve the basic problems of land tenure and the maldistribution of income and wealth in the country.

Like the other countries of the Middle East the concentration of agricultural wealth in Iraq so far has proved neither to be a source of blessing nor has it been conducive to growth and economic development.[24] Whatever increase in social wealth that has occurred originated mainly in the governmental sector and was financed by public revenue, especially the increasing oil revenue. The concentration of land ownership may indeed be considered one of the main sources of economic and political instability and the major means for abuse of the fellahin that compose the larger segment of the population. According to Salter:

> "The great water scheme, the dams, reservoirs, main irrigation works and the main drainage outfalls, etc., are being constructed wholly at the expense of public revenue derived from oil royalties which belong to the whole country, not to any one section of it. These water schemes will of course increase the productivity of the land and, therefore, its value—to an extent that in time will equal—and indeed ultimately exceed—the cost. It is not unnatural that sections of the community should regard it as unjust that one section, already more privileged than others, should now be further enriched to such extent at the public expense, and should resent a policy which would have that effect. They may well have an ultimate power which is altogether out of proportion to their present representation in Parliament and their ability to influence legislation by constitutional means. It is this contrast between immediate and potential power that constitutes the danger and the difficulty of the problem."[25]

The retardation of total demand created by maldistribution of income and the concentration of wealth hinders the growth and productive capacity of the country by restricting consumer markets and the investment opportunities. There was relatively little investment even in land. Irrigation was provided through public funds that obviously served the interest of landlords without comparable tax collection due to their obstructive political power. With minor exceptions, even promoting better agricultural production through the use of improved techniques in farming and conservation and use of machinery and better seed and fertilizer was neglected by large landlords. This was due mainly to ignorance and lack of enterprising spirit, as these types of investment would obviously increase the value of land and bring higher income to the landowner.

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tion in Its Second Year, issued by the Higher Committee for the Celebration of the 14th July Revolution (Baghdad: The Times Press, 1960), p. 255. The number of landless farm workers is given as 1,400.000. This is in addition to another three million living in the rural areas without a permanent source of income. No more elaboration is made as to the total population of the country or to the breakdown of these figures. As to the size of ownership in the pre-revolution era the following are reliable estimates: 3,619 individuals owned estates ranging from 1,000–1,000,000 donums (one donum equals .618 acre). The total area owned by these individuals estimated to be 18 million donums, including 6 million donums owned by only 272 individuals. The total area of the privately-owned arable land was estimated at 22 million donums.

[24] "Middle Eastern Countries where inequality [in income] is greatest are among those with the lowest rate of capital formation. All or most gets spent." Galbraith, *op. cit.,* p. 81.

[25] J. A. Salter, *The Development of Iraq: A Plan of Action* (London, England: Caxton, 1955), pp. 54–55.

Furthermore, the low pressure of population on agricultural land in Iraq does not stimulate the incentive to increase the productivity of land, as in the case of Egypt where the scarcity of cultivatable land is a limiting factor. The land was considered as a source of income only; the protection of the ownership right could be done by political maneuvering in Baghdad. This led to the widening of the gap between the landowner and the farmer and increased the consciousness of the conflict of interest between the farmers and their landlords.

Adjusting measures could have been used through democratic institutions that would restore the social balance by provision of appropriate means for resolving the conflicting interests and facilitating the processes of social change. An effective measure is possible through the state's taxing power to level the existing disparities in income and wealth and bring more harmony between the diverse social groups. High taxes on land can induce higher production and the diversion of private land to the state ownership in case of default. When the tax power or some other appropriate measures are not used and the pressure of the social conflicts continue to increase, something has to give and instability of the social order may be the outcome.

The New Agrarian Reform Law

The change in the political regime in Iraq on the 14th of July, 1958 and the declaration of the Republic of Iraq, introduced a new Agrarian Reform Law.[26] An observer of contemporary history of Iraq would recognize that this revolution was but the most serious of a series of unrests and uprisings largely attributable (in addition to other political factors) to the prevailing old land tenure and inequitable ownership and income.[27] Whatever is said at this stage about the future change of the agrarian system in Iraq is necessarily of a speculative nature. Its objectives and driving force are political to a great extent.[28] It may take some time for things to settle down so as to make meaningful any appraisal of the economic impact of the agrarian reform. The political and social influence of the landlords cannot disappear overnight and the redistribution of land may face different degrees and types of difficulties and resistance before it becomes an accepted rule.[29]

The historical and economic background and the agrarian structure discussed above, however, have pointed to the trend of events and indicated the

[26] The Agrarian Reform Law No. 30 of 1958, signed on September 30, 1958.

[27] "Three characteristic features distinguish the agrarian problems in Iraq: the high percentage of State land; the extreme polarization in the distribution of private land property; and the serflike position of the Iraqi fellah." Gabriel Baer, *op. cit.*, p. 381.

[28] In the introduction of the Agrarian Reform Law the first objective is stated as abolition of the feudalism as a way of production and as a colonial asset, and destruction of the political influence enjoyed by feudal lords as a result of their large land ownership. This influence was used in directing the political system in accordance with their (landowners) interests in addition to the colonial interest —an influence that interfered with the government administration. All this is done to make it possible to use the governmental machinery in accordance with the public interest.

[29] On March 3, 1958, the northern province of Mosul, where the chiefs of strong nomad tribes of Shammer own a vast area of land, was chosen as one of the areas where the Land Reform Law would be enforced. On the 8th of the same month, there was an armed uprising in Mosul. The Associated Press correspondent wrote on March 18, 1958: "[The leader of the revolt] was encouraged by Sheik Agil, lesser sheiks and wealthy city merchants who also are absentee landlords of farm lands tilled by the peasants. They are said to have been provoked to force by the government's attempt to put into effect an Agrarian Reform Law decreed by Premier Kassim last fall, two and a half months after the revolution that overthrew the Iraq monarchy. For centuries, most of Iraq's farm land has been owned by landlords who took up to nine-tenths of the crop." *The New York Times*, March 18, 1959, p. 4.

urgent need for a basic and deep-rooted agrarian reform that would emancipate the fellahin and release the economic potentialities of the country for further progress.[30] The new Agrarian Reform Law can be considered in this respect a step forward in solving the chronic agrarian problem in Iraq which sets the stage for further social and economic improvements. On the other hand, if this law were extensively applied it would entail a considerable amount of social and economic costs. Let us first take a look at the important and relevant parts of the new program, then attempt to make an appraisal of its significance and its expected effect on the economy.

The Main Objectives and Features of the New Law

The Agrarian Reform Law is designed: (1) to raise the standard of living of a major segment of citizens—the peasants—and to provide for the raising of their social standards and (2) to raise the level of agricultural production in the country as a major component of a growing national income. For an achievement of these objectives there would be a ceiling on land ownership. The land will be distributed to the peasants so as to secure a minimum and decent level of living for the farm family. The establishment of cooperative systems at different levels of the agricultural production is required in order to provide for the use of modern, scientific, and technical methods of production. The regulation of the economic and contractual relationships among the factors of production in agriculture is required so that each factor may receive a fair share.

The maximum of personal holdings in land, whatever title it has, is limited to 1,000 donums (618 acres) in irrigated land, or 2,000 donums in rainfall land.[31] Companies and agricultural societies are allowed to hold more than the maximum area in non-cultivated land for the purpose of reclamation and development. The excess is to be seized by the government within the ensuing five years, starting with the largest of holdings. The owners are to be compensated for their seized land by a value equivalent to the price of similar land, plus the estimated value of the immovable property and trees, minus the estimated share of the farm hands and planters in existing trees that will be retained on the land. Compensation shall be paid in three-percent government bonds, redeemable within a period of not more than twenty years. Date and terms of redemption and circulation of these bonds shall be promulgated by government ordinance.

Also within a five-year period the seized lands and the state land will be distributed among the fellahin so as to provide each recipient with a holding of not less than 30 donums and not more than 60 donums (about 19 and 39 acres respectively) in irrigated land. The size of the holdings distributed would be doubled in the rainfall areas. The recipient has to be an Iraqi farmer by occupation. First priority shall be given to those who actually cultivated the redistributed lands as tenants, partners, or cultivators; then to those farmers re-

[30] Professor Warriner visited Iraq in the spring and winter of 1955, and showed great insight in her writings about the Middle-East economic problem. In the case of Iraq, she indicated the needs for drastic changes in the agrarian structure, "without an expropriation of the very large land holdings, no legislation can succeed, for the problem of reform is a problem of political power. Iraq needs serf emancipation. Some have believed, or pretended to believe, that evolutionary reform is possible by settling farmers on state lands to be developed under the new irrigation scheme." Warriner, *op. cit.*, p. 157.

[31] The unit of area used in Iraq is *meshera* or *donum* which is equal to .618 of an acre or .25 hectare.

siding in the same area and supporting the largest family with the least income; then to non-residents.

The price paid by the new owners for the seized land, would be based on the compensation for the seized land, plus three percent annual interest, plus twenty percent of the total value to defray the distribution and administrative expenses.

All agricultural lands granted by *Tapu* or by *Lazma* rights (which are exposed to seizure) will be considered state lands (Miri Sirf land) and could be seized without compensation, if the owner is proved to have failed to cultivate them himself, or through others, during three years preceding the enforcement of the Agrarian Reform Law, or to have left them uncultivated for a period of one year or more after enforcement of this law and without any legitimate excuse.

Agricultural Cooperative Societies

Farmers who have taken over the requisitioned land in each area are required by law to join an Agriculture Cooperative Society constituted in that area. The Society may include other members who own non-distributed land in that area, not exceeding in size the maximum prescribed limit of distribution. The functions of the cooperative societies are: (a) to obtain agriculture advances for members; (b) to provide the farmers with seed, fertilizer, cattle, agricultural machinery, storage and transportation means; (c) to organize the cultivation and exploitation of land in the most efficient manner, including the selection of seed and the grading, combating pests, and digging canals and drains; (d) to market the principal crops on the behalf of their members and keep their accounts; (e) to render all other agriculture and social services in the interests of their members. The Agricultural Cooperative Societies will be under the supervision of an official selected by the government. All these societies will participate in the formation of a general cooperative society and federation.

Organization of Agricultural Relationships and Contracts

The existing tenancy contracts and agreements are secured by law for at least the next three years following the enforcement of this law. Future contract terms would last for a minimum of three-year periods also. Tenancy relationships between the landlords and farmers are regulated by this law so that the owner provides the lands with irrigation water, whether by pump or free flow, to the border of the farm. The farmer is responsible for: (a) plowing in case of absence of owner tractors; (b) harvesting, collecting, transporting to barn, threshing and preparing the crop for the market in case of lack of machinery to perform some of these duties; (c) providing all other labor needed in agricultural production in accordance with the prevailing technique. Management, seeds and fertilizer are to be provided by the landlord in the irrigated land and by the farmer in rainfall land. Responsibilities and their remunerations could be exchanged by agreement between landlords and farmers. The income share for each productive activity is prescribed percentage-wise by law.

Each year a minimum wage rate payable to agricultural workers will be determined and announced by a special 5-member committee, composed of a government official (as head), two members representing the landlords, and two other members representing the agricultural workers. The agricultural workers are eligible to form their own unions

and, for the first time in Iraq, to protect their interests by collective bargaining.

Economic and Social Implications of New Land Reform

The main features of the agrarian reform are an arbitrary ceiling on the size of property in land and the setting of a more equitable system of ownership and operation for both the landlords and new owners. Except for the classification of land into rainfall and irrigated land, no explicit consideration is given in the text of the law to differences in fertility of soil, location, and/or different levels of management skill. However, these problems are partially considered in the process of land distribution to the new owners within the limits of 19–39 acres and according to the established priority system. It is known that in a free and competitive system the productive unit tends to operate at an optimum size where the product would be maximized at a least cost. These economic advantages seem to be sacrificed in this case in the interest of political expediency, formal equality of distribution, and quick decision. It is also prescribed by "law" what should be the specific productive service rendered by farmer and landlord and what would be the remuneration for each type of the services out of the total income. There appears to be an artificial rigidity introduced in the working of the economic system through this land reform program.

However, the land system in Iraq was neither free nor competitive. The choice actually is between maintaining excessive holdings (supposedly beyond the optimum size) inefficiently and indirectly operated by absentee landlords who provide only a minimum level of productive investment and the creation of small owner cultivatorships potentially more productive and stable. The small owner-cultivator receiving the fruits of his labor may have more incentive to increase his output and improve his crops and livestock. It is also a choice between excessive exploitation of one factor of production (labor) by the owners of the other factors (capital and land); and paying it much less than its share as payment for its contribution in production, on one hand, and a somewhat arbitrary system of income distribution mortgaged by political and social considerations that tends to restore more equality of return among the factors of production, on the other hand. It must be pointed out that the economic framework that involves limitations on the size of holdings, forcing an arbitrary allocation of the resources and distribution of income, cannot be taken as a permanent rule (but only as a transitory solution) if further progress is to be anticipated. It is basically an attempt at reorganization of the economy. The short-run outcome best hoped for is the restoration of more balance among the social classes where the laborer and farmers would have relatively higher economic and social status and would be allotted a larger share of the national income and more bargaining power. In the long run there is a potential increase in the efficiency and productivity of the farmer as a result of the expected higher level of incentives and standard of living.

Some of the results of the agrarian reform in Iraq during the two years of existence of the new republic are stated in the following accounts: (a) The number of landlords who have reported that their land estates exceeded the legal ceiling was 3,253. Out of this number, 1,147 landlords owning 7,580,212 donums were announced to be subjected to the Agrarian Reform Law. The Ministry of

the Agrarian Reform actually expropriated the lands of 256 landlords owning 2,307,618 donums. (b) This Ministry is now managing large areas of state land (Miri). The total area supervised by the temporary Agrarian Reform Administration amounted to 4,650,711 donums, all of it leased to 137,292 peasants. (c) The Iraqi government decided to delay an immediate and large-scale land distribution until provisions for the solution of such financial and technical difficulties as irrigation and drainage systems, topographic survey, model villages and cooperative societies are made. For the time being the emphasis seems to be on expropriation of large holdings and renting the expropriated land to landless peasants. On July 14, 1959 some 2,207 peasant families received titles to 444,442 donums of arable land and orchards. A plan was set to distribute another 3,077 units amounting to 234,802 donums and to build 35 model villages during the period ending April 1960. In addition, the distribution of 258,557 donums to 2,500 families and building up of 23 villages were planned in Kut Province and another 785,429 donums in seven provinces were considered for distribution by the end of September 1960.[32]

Redistribution of land, more secure tenancy, and minimum wages, important as they are, will not go far toward increasing the productivity and raising the income and standard of living of the farmer without safe provision for credit, market facilities, and better land utilization. It may indeed decrease the total and per capita income and production for some time to come if large-scale redistribution is carried on in this country and no effective provision is made to restore the production process that is disrupted by the radical and sudden changes in the economic and social order.[33] Formerly, landlords provided seeds and a certain level of management directly or indirectly through their agents. The ability to make wise decisions and to comprehend the over-all picture of farming problems could not be expected from a peasant who is suddenly elevated from the status of semi-serf to a level of responsible land owner. There is also the tendency to reduce the total man-hours supplied by the farmers as a result of higher income, or what the economists call the "income effect." The creation of an efficient and well organized cooperative system under government supervision is conceived to be the answer in this case. Such a system is resorted to in order to compensate for some of the advantages of previous large-sized holdings (such as provision for seed and credit) and to minimize the inadequacies and inefficiencies of the new owners. This is in addition to the other economic and social purposes that the cooperative societies could serve. However, this basic aspect of land reform does not seem to be progressing at the same rate as land expropriation and distribution. Farmers' Societies were established soon after the enactment of the reform law. The obvious lack of experience in collective work and the atmosphere of excitement directed the activities of these societies toward politics rather than production. The government responded by enactment of the Farmers' Societies Act (No. 129, 1959) that defined such societies as

[32] *The Iraqi Revolution, op. cit., pp.* 256–257.

[33] Actually there was a drop in the main crops produced in Iraq during the years 1958, 1959. The reduction was partially due to the political upheaval and the abandonment of estates by some of the landlords, but also to the especially bad weather conditions and heavy sandstorms. See *Foreign Agriculture,* United States Department of Agriculture: Foreign Agriculture Service, Washington, D.C., May 1960, p. 14.

professional organizations aiming at raising the level of the fellahin with regard to agriculture and the production problems. The government required the Farmers' Societies to establish agricultural cooperatives. Agricultural credit, seeds and technical aid are to be provided by the government. The Farmers' Societies would cooperate with the authorities in distributing irrigation water and combating pests.[34]

According to The International Bank for Reconstruction and Development, "Under existing conditions cooperatives will not, however, be organized spontaneously by the farmers themselves. They will need the impetus, assistance and supervision of the government. The cooperative is a rather advanced form of social organization and can therefore be expected to develop only at a slow rate."[35] The seized land, in accordance with the Agrarian Reform Law, is not free of charge and should not be. Payments for the extensive benefits received from acquired property should be required as a matter of general principle. Non-payment would unduly widen the disparity between economic status of those farmers who have the chance of new ownership and others.[36] A moderate path is pursued by the present government in Iraq. The excess above the maximum holding, and government *Miri Sirf* land have to be compensated for by farmers' indirect payment through twenty-year government bonds bearing three-percent interest.

Actually, these bonds could serve an important purpose as a source of investment for economic development by both government and former landlords. The confidence and cooperation of the former landlords could be restored and their income losses, incurred because of land distribution and future inflation, would be replaced. The terms of redemption and circulation of these bonds could be negotiated, on application to central banks, for purchase of uncultivated land and government stock in industrial development projects. Thus, land reform would lead to better reallocation of resources by diversion of private investments from land and real estate speculation to industrial and development projects. The Japanese economic development case originally was based on a similar policy of land reform. The wealth and capital in land was diverted to make the nucleus for the later industrial development.[37] However, in the case of Iraq's economic development, the scarcity of capital for investment is not a critical and limiting factor.

Land distribution, rent ceiling, and minimum wages for agricultural workers —the three outstanding measures introduced in the Agrarian Reform Law—in addition to their political objectives would serve mainly to redistribute the national income in favor of low-income groups and would provide more funds for an increasing expenditure on consumption. The opportunity of investment in housing and other producer goods would also be enhanced. Thus, some of the essential requirements for industrial development would be provided, i. e., an active demand and wide market, especially for consumption goods and building materials.[38]

[34] *Alahali*, September 28, 1960, p. 1—Arabic.

[35] *The Economic Development of Iraq op. cit.*, p. 262.

[36] *Ibid.*, p. 16.

[37] Cf. V. Webster Johnson and John A. Metcalf, "Land Distribution and Industrial Growth," *Land Economics*, May 1953, p. 158, and also the follow-up article of Irving I. Kramer on the Japanese Case, *ibid.*, November 1953, pp. 314–322.

[38] In three years of agrarian reform in Egypt, the consumption of textiles increased to such an extent that the number of the mechanical looms have in-

Because it is basically an agricultural country, which is also sparsely populated, Iraq should lay the greatest emphasis on increasing the level of productivity in the agricultural sector. The increase in productivity should have priority in time and effort over alternative plans. The reasons for this priority include the fact that the majority of population is already engaged in agriculture. A second reason is that some increase in agricultural productivity does not incur high cost. Such measures as improved knowledge in seed selection, soil conservation, crop rotation, the use of fertilizers, livestock feeding, fighting insect pests and many similar measures could be taken with much less cost for the same amount of increase in the national income than through industrialization.[39] The fact that there is already an extensive expansion in the irrigation projects makes the diversion from spending on such projects to agricultural production economically advisable. Land reclamation could be carried at a lower rate than before and in accordance with the expected growth in population. Population growth may later assume a higher rate with an expected higher standard of living and improvement in general health and education. But this should not be a serious problem in Iraq. Besides the expected increase in productivity in agriculture the present area of approximately 3,200,000 acres irrigated by the Euphrates and Tigris could be doubled by water storage and canalization.[40]

The availability of sizeable capital funds originating from oil revenue makes an intensive investment in agriculture in the present time recommendable. Drainage, housing, farm machinery, storage, roads and other marketing facilities, vocational training, public health, and education could be either directly financed by government as parts of its development program, or indirectly through credits and loans. These projects, in addition to their contribution to higher national income, would provide a short- and long-run opportunity for industrialization in form of increasing demand for manufactured goods and increasing labor surplus. An increasing labor force resulting from an increase in agricultural productivity makes the desired large-scale industrialization program more feasible. More labor could be released from agriculture because of increased food production that would be sufficient to feed those who remain in the agricultural sector and afford enough surplus for labor in the industrial sector. The key plan for investment in Iraq should be directed toward human resources. The majority of people now are living directly or indirectly on the produce of land that is not utilized fully or adequately. The good fortune of this country in having an abundant oil revenue should serve the interest of this majority through raising the level of their living. All other plans and programs should be complementary and subordinate to this prime objective.

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creased by 40,000 units. The mechanical spinner has also increased by 15 percent. Hassan A. Dawood, "Agrarian Reform in Egypt: Case Study," *Current History*, June 1956, p. 338.

[39] Rangar Nurske, *Problems of Capital Formation in Underdeveloped Countries*, (Oxford, England: Basil Blackwell, 1953), p. 52.

[40] United Nations Conciliation Commission for Palestine, Final Report of the United Nations Economic Survey Mission for the Middle East, Part II (Lake Success, New York, 1949), p. 31: also cited by Said Himadeh in *Middle East Journal*, Summer 1951, p. 270.

Reports and Comments

Zoning Boards: In Theory and In Practice

A HOST of experts on zoning operations in government have bitterly accused Boards of Appeal of being law violators, undoers of zoning and a wide variety of other wrongdoing.[1] Are they a special brand of miscreants?

Consider, for example, the charges of a distinguished planner, Hugh Pomeroy, the Executive Director of the Westchester County Planning Department in New York State.[2] He has said that they often undermine confidence in the integrity of the zoning plan. Even though the Board's improprieties might not greatly affect land use and density, "disintegration" of the zoning plan should not be allowed, Pomeroy has written. He has been appalled that these Boards considered themselves to be vested with the power to dispense special favors. Professor Pomeroy has written that such action makes Boards of Appeal "law violators." He also is of the opinion that these Boards (called Board of Zoning Adjustment in some jurisdictions) should not have any responsibility which is legislative in nature. He continues: "It is especially important for the Board of Appeals to understand that relief cannot be granted unless the difficulty is substantial. Merely an opportunity for the applicant to make a greater financial return from his property does not itself provide any justification for granting such adjustment. . . ."

Historical Review

Recognizing, as Justice Holmes did, "that a page of history is worth a volume of logic" our analysis begins with the first period of zoning, roughly the period between the two world wars, for the ideas of that interval to a large extent control now.

To remedy land use headaches that resulted from each real property owner's attempt to maximize his profit, a simple cure was prescribed. Dangerous and annoying land uses would be allowed but segregated. Through use-zoning harm would be minimized. This cure was deemed more potent than the nuisance doctrine and protective covenants. Zoning became the major tool of American planning.

The triumph of the zoning patriarchs can be explained as follows: The early acts and ordinances were drafted with lawyer-like caution. They were simple (possibly too simple). To the owner who felt that his vacant lot was unique and could not be developed properly if the zoning were followed, an administrative remedy was given. He might get a variance from the strict letter of the ordinance upon a showing of "undue difficulty or unnecessary hardship."[3]

The administrative remedies, variance and the special exception, were legislative attempts to resolve the conflict between the private property owner's right to use it as he pleased and the community's power. The aim was to afford necessary flexibility, an objective that from the beginning has been a central theme. Further, because of confiscatory[4] cases which might come under zoning ordinances, the variance was deemed to

[1] See, for example, Hugh R. Pomeroy, "Losing the Effects of Zoning through Leakage," *Planning and Civic Comment*, October 1941, p. 9; "The Place of the Planning Commission and Board of Zoning Appeals in Community Life," *Vanderbilt Law Review*, 1955, pp. 801, 803; Edward H. Gaylord, "Variances, Exceptions and Conditional Uses Permits in California," *University of California Law Review*, March 1958, p. 196; "Administration of Zoning Variances in 20 Cities," *Public Management*, 1948; Walter Blucher, "Is Zoning Wagging the Dog?", *Planning*, 1956, pp. 96, 100; and Note, *University of Pennsylvania Law Review*, 1955, p. 516.

[2] Hugh R. Pomeroy, *ibid.*

[3] William L. Weismantel, "Zoning, A Space Fight With a Bright Future," *St. Louis University Law Journal*, vol. 2, 1952–3, p. 215.

[4] This was acknowledged by an early writer, Frank Williams, in *Law of City Planning and Zoning* (New York, New York: The MacMillan Company, 1922), p. 282.

be a safety device to impart to the enabling acts a constitutional validity.[5]

Recognizing that it is almost impossible to draft ordinances that deal equitably with all zoning situations, administrative boards were established throughout the nation. Therefore the primary raison d'etre of zoning boards was and is to handle "hard cases" in such a way as to minimize the possibility of their reaching the courts (and endangering the ordinance as a whole) or being turned into requests for amendment of the ordinance.[6]

Generally these boards are still deemed to be of a judicial nature and having fact-finding and discretionary powers.[7] Many have followed the zoning leader, Edward Bassett, and repeated after him that since the boards are not legislative bodies they are not at liberty to decide what is best for the community.[8]

Despite the complaints of their operations[9] these Boards have flourished. For more than thirty years courts have been trying to formulate rules restraining them. Without completely describing and analyzing these rules[10] it must be pointed out their consistency and certainty are more apparent than real. I cite one example of many: Generally courts regard the applicant for a hardship variance with disfavor, since the claimed hardship could have been avoided by not purchasing the land. But is this consistent with the rule that the granting of a variance depends on the nature of the property rather than its owner?

The increased percentage of zoning contention as time advances does not connote that our thinking about Boards of Appeal is perfect. Surely it is questionable whether the citizens who compose these local administrative agencies should be singled out individually and collectively as special miscreants. Analysis indicates that much more is involved.

The Impact of Euclidean Zoning

Actually we have been moving away from what Professor Haar of the Harvard Law School has termed Euclidean zoning for some time (referring of course to the zoning sanctioned by *Euclid* v. *Ambler*). Post World War II technology has been a factor in accelerating the demand for more flexible land use control than the Euclidean use, height, and bulk rigidities. Perhaps the classic *Euclid* v. *Ambler* decision was obsolete when written in 1926. Perhaps the various sins of zoning Boards—granting variances without "undue hardship," etc. have resulted from conceptual inadequacies.

From the beginning these Boards have been bedeviled with such amphorous pronouncements as "practical difficulties or unnecessary hardships" or references to the "spirit" or "general purpose and intent of the ordinance," or to "public welfare" and substantial justice.[11] We recall that American legislatures are often unable or unwilling to enact a clear policy directive for agencies of this type. A statute that is the result of legislative dissension and imprecision will not make for a clear course for a Board of Zoning Appeal or for any other administrative body. Further this kind of statute, which is all things to all men, can be intentional. It is also probable that the broad standards may be due to the legislative belief that something should be done

[5] *Cf., Protomastro* v. *Board of Adjustment*, 137 N.J.L. 250, 59 A. 2d 644 (Supreme Court 1948); *Harvard Law Review*, December 1948, p. 327.

[6] Philip P. Green, "The Power of the Zoning Board of Adjustment to Grant Variances from the Zoning Ordinance," *North Carolina Law Review*, 1951, p. 246.

[7] Eugene McQuillin, *Municipal Corporations* (Chicago, Illinois: Callaghan & Co., 1955), pp. 434–436.

[8] Another constitutional apprehension (in addition to avoiding the charge of confiscation)—the rule against the delegation of legislative power—explains the minimization of the Board of Appeal's role as an adjunct of the legislative body and as a participant of the legislative process. The consequent accentuation of the Board's "judicial" nature has often confused analysis. This is discussed further in a section of this paper.

[9] Statistics of the following sort are often used to demonstrate the inadequacies of Boards of Zoning Adjustment such as (a) in Cincinnati, during the period 1926–37, out of 1940 applications 1493 variances were granted, and (b) in Philadelphia from 1933–37, 4000 variances were granted out of 4800 requests.

[10] For a detailed analysis of these rules see, Stephen Sussna, "Undue or Unnecessary Hardship and the Granting of Variances," *New Jersey Law Journal*, February 12, 1959, pp. 5, 6.

[11] Some courts (in Maryland and Illinois) have held these statutory standards to be invalid because of their vagueness: for example, *Sugar* v. *N. Baltimore Methodist Episcopal Church*, 165 Atlantic 703 (1933) and *Welton* v. *Hamilton*, 176, N.E. 333 (1931).

but exactly what should be worked out by the administrative agency within limits. The growth of administrative rule-making and administrative adjudication has resulted in part because of the inability of legislative bodies to legislate with precision.[12] These perilous standards certainly have not helped curtail the frequent complaints against Zoning Boards.

Analysis of Zoning Theory Rigidities

Consider as examples of zoning imperfection the following: Certainly variances and spot-zoning have had good results as well as bad. The non-conforming grocery may very well be more beneficial than a conforming use. To be a worthwhile tool of rational planning, zoning has to do much more than create socio-economic walls. It has to recognize our changing technology. Professor Perkins, a Philadelphia planner, discussing a use generally deemed to be the most incompatible to residences, states: "Of course all industries have not yet, and perhaps because of the nature of their processes, cannot even attain the status of good neighbors in a residential area. But certainly many have and this fact should make us reconsider our hidebound attitudes."[13]

Less hidebound outlooks are illustrated in the two following New York cases. In *Rodgers* v. *Village of Tarrytown*,[14] the question arose whether the zoning ordinance was valid because in proclaiming a residence B-13 district (garden apartments) it set no boundaries for the new district and made no changes on the building zone map. Judge Fuld wrote that: ". . . since the ordinance merely prescribed specifications for a new use district, there was no need for it to do either one or the other. True, until boundaries are fixed and until zoning map changes are made, no new zone actually comes into being, and neither property nor the rights of any property owner are affected. But it was not the design of the board of trustees by that enactment to bring any additional zone into being or to affect any property or rights; the ordinance merely provided the mechanics pursuant to which property owners might in the future apply for the redistricting of their property. In sum, the . . . amendment was merely the first step in a reasoned plan of rezoning and specifically provided for further action on the part of the board.

"Therefore, we see that the village planning board was empowered to approve such amendments and, in case such approval was withheld, the local governing body was authorized to grant it. The ordinance set up exacting standards of size (10-acre minimum) and physical layout for garden apartment districts. The court concluded that the charge of the illegal spot zoning was within substance, since the planning board would determine, in each case, whether the approval of an amendment to permit creation of a garden apartment district 'accords with the comprehensive zoning plan and benefits the village as a whole'."

In *Church* v. *Town of Islip*[15] the New York Court of Appeals reviewed the rezoning of a corner lot on a main street from residence A to business. Conditions were imposed on the owner requiring him to execute and record restrictive covenants as to the maximum area that the buildings were to occupy, and as to screening. The basis of the attack was the statutory requirement that zoning be in accord with a comprehensive plan. It was alleged that this rezoning was illegal "contract zoning" since the change was subject to special conditions imposed on this particular property alone.

Writing for a divided court, Judge Froessel upheld the validity of the ordinance. He wrote: "Surely these conditions were intended to be and are for the benefit of the neighbors. Since the Town Board could have, presumably, zoned this . . . corner for business without any conditions, we fail to see how reasonable conditions invalidate the legislation. Since the owners have accepted them, there is no one in a position to contest them. . . . To meet increasing needs of Suffolk County's own population explosion, and at the same time to make as gradual and as little of an annoyance as possible the change from residence to business on the main highways, the Town

[12] Leonard D. White, *Introduction to the Study of Public Administration*, (New York, New York: The MacMillan Company, 1954), p. 498.

[13] Coleman Woodbury, Ed., *The Future of Cities and Urban Redevelopment*, (Chicago, Illinois: University of Chicago Press, 1953), pp. 32–39.

[14] 302 New York 115, 96 N.E. 2d 731 (1951).

[15] 8 New York 2d 254 (1960).

Board imposes conditions. There is nothing unconstitutional about that."

If the general welfare can be promoted by having "mixed" land uses that are compatible, what happens to Euclidean zoning. Perhaps use restrictions of many ordinances have become a coarse sieve,[16] since the "general welfare" can be promoted as well or better than by the use of Euclidean zoning and its accoutrements. Yet the fact that we can now to a considerable degree scientifically measure and analyze the consequences of different neighboring land uses, does not mean that lagging attitudes are disappearing. So far no trumpet to tumble down all the walls of Euclidean zoning has been sounded.

Even though statutes throughout the nation require that zoning be in accord with a comprehensive plan, the vast majority of zoning ordinances are not the end-products of thorough, objective planning.[17] For the most part we have zoning without planning and the prospects for zoning based on dispassionate, comprehensive planning on a bigger scale do not seem to be very near. It may be that because of the nature of our society we are likely to have zoning that is based on essentially individualistic, piecemeal minimal planning.

It was recognized from the very inception of zoning that some persons may be exempted from the strict requirements of the ordinance. But such police regulations as building codes and health codes demand absolute compliance.[18] Is the reason for the distinction that the threatened risk that zoning seeks to prevent is more indirect and speculative. Members of Boards often justifiably feel that the requirements of a zoning ordinance achieves nothing worth achieving.[19]

The simple generalization that these Boards are divorced from legislative power is highly questionable. The standard explanations concerning their strict judicial nature are misleading. Reviewed from its purpose a Board of Appeal does act in a legislative capacity. For it does vary or modify the strict letter of the ordinance. An applicant for a variance seeks a change in the existing ordinance, and not a judicial determination in the sense that the aim is to have the ordinance declared invalid. If Boards of Appeal are to properly function within a sound scheme of zoning practice, their essential nature must be explicitly recognized. One writer advocates that these agencies act in a legislative capacity that is supervised by the legislative body itself or by the judiciary.[20]

It is quite possible that it is thinking based on an over-simplified notion of separated powers that is responsible for the difficulty. To understand the gap between the theory concerning the functioning of Boards of Zoning Appeal and how they actually operate, a more careful look at our theory of separated powers than is commonly taken is necessary. Notions to the contrary notwithstanding, relationships between branches of our governmental system are intertwined. Even courts participate in the legislative process. Despite our allowing "the lawyers and judges to grow into something like a separate estate of the realm and to assume an unrivalled independence and power; that (even) courts are integral part of government."[21]

To apply the doctrine of separation of powers to the functioning of a Board of Appeal and to isolate it along the narrow lines that some would is a misunderstanding of our system of government. I must disagree with those who insist on alleged judicial exclusiveness for these Boards. Indeed each of the three branches of government partake in the powers of the other two.[22] The very nature of our governmental

[16] Paraphrasing a remark of New Jersey Supreme Court Justice Hall's dissent in *Andrews* v. *Board of Adjustment of the Township of Ocean* 30 N.J. 245, 152 A. 2d 580 (1959).

[17] Charles M. Haar, *Land-Use Planning*, A Casebook on the Use, Misuse, and Re-Use of Urban Land (Boston, Massachusetts and Toronto, Canada: Little, Brown, and Company, 1959), p. 744.

[18] Horack and Nolan, *Land-Use Controls* (St. Paul, Minnesota; West Publishing Company, 1955), p. 744.

[19] Or, to put it in the extreme language of an early decision, "zoning is one of the latest examples of the interference with private rights upon the claim of what is rather indefinitely termed the general welfare." *City of Providence* v. *Stephens*, 47 R.I. 387, 391, 133 Atl. 614, 616 (1926).

[20] Edward Murphy, "Administrative Change and Judicial Relief in Zoning," *Illinois Bar Journal*, July 1958, p. 854.

[21] Max Radin, "Courts," *Encyclopedia of the Social Sciences* (New York, New York: The MacMillan Co., 1930), p. 524.

[22] W. W. Willoughby, *Constitutional Law of the United States* (New York, New York: Baker, Voorhees & Co., 1929), p. 1619.

boards is a complex combination of executive, legislative, and judicial functions. Political scientists recognize that they play hob with the separation of powers theory.[23] They are only too familiar with the institutional struggle the cause of which is to be found in a faulty governmental structure, i.e., in the separation of powers and the split between the personnel of the branches of government. How the powers and duties that state enabling legislation and local zoning ordinances give to Boards of Zoning Appeal are employed, may be illustrated by several examples: (1) A zoning ordinance defines the term "customary occupation," and lists various specific uses that are permitted. The Board has to decide whether to also allow the remodeling of a portion of a residence for use as a beauty parlor. Here the Board must use a complex of powers. (2) Most zoning ordinances provide that certain specific uses may be allowed only with the permission of the Board and subject to such conditions as the Board may require in order to execute the purposes of the ordinance.[24]

Since the building inspector must automatically deny any applicant for a building permit for uses requiring a special exception, it appears that this is a matter that is completely within the domain of the Board. However, since the Planning Board or Commission is the agency responsible for the studies leading towards the adoption of the zoning ordinance, the Zoning Board is well advised to consult with the Planning group. For in addition to investigating such matters as the use proposed, sizes of structures, and yards, the Board must be mindful of the need to impose conditions so that the intent of the ordinance may be preserved. And although the merit of urging the cooperation of the Board with other governmental bodies is patent, it must be pointed out that this practice is more honored in the breach than in practice.

The proliferation of agencies in the many disorganized and disintegrated local governments hardly makes for integration. But the failure of these Boards to fully integrate with other governmental units should not lead to special criticism.

However, the fact remains that this theoretically and perplexing administrative unit was selected for the function of adjusting zoning matters. Notwithstanding its shortcomings, we must recognize that this type of administrative Board has proven particularly useful in our public administration, especially (1) when the function it administers is new and is still controversial; (2) when the technique involved has not been developed to the point of permitting the delegation of the task to a single executive; and (3) when broad differences of interests are evident among the public, thus requiring a balancing of representative interests in a plural body rather than a single executive.[25] These three points are directly applicable to Zoning Boards. We must also recognize that lawyers (who dominate our legislative bodies) have a tendency to compel new organizations into the mold of the organization with which they are most acquainted—courts of law. This explains in part why Zoning Boards were early cast in an over-simplified judicial role.

Another fact that deserves more than bemoaning is that zoning regulations afford opportunities for political favors.[26] What must be faced is that public administration cannot be immunized against politics even if there is a strong urge to do so.[27]

Adjusting Theory To Facts

We are heading toward a system of zoning that will give increasing consideration to the merits of specific proposals. This hardly means that the walls of the Euclidean zoning will immediately disappear. But the relatively cumbersome sets of criteria (i.e., the rules pertaining to the granting of variances) are being gradually replaced by more flexible land use controls (witness the spreading popularity of special excep-

[23] M. E. Dimock *and* G. O. Dimock, *American Government in Action* (New York, New York: Rhinehart & Co., Inc., 1946), p. 565.

[24] See, *A Guide for Boards of Zoning Adjustment*, (Nashville, Tennessee: Southern Association of State Planning and Development Agencies, 1951), pp. 8, 11; *Local Planning and Zoning* (Albany, New York: New York State Department of Commerce,) pp. 32–34.

[25] Albert Lepawsky, *Administration* (New York, New York: Alfred A. Knopf, 1949), p. 575.

[26] Lynton K. Caldwell, *The Government and Administration of New York*, (New York, New York: Thomas Crowell, 1954), p. 162.

[27] For a more complete treatment of this see, Norton E. Long, "Power and Administration," *Public Administration Review*, Autumn 1949, pp. 257–264.

tions or custom-made amendments). It must be remembered that this need for flexibility was recognized in the beginning, even though it manifested itself in different forms.

In the 1950's planners talked a lot about performance standards. Put bluntly, the proverbial glue factory can be acceptable if it behaves well—if it is so operated that it does not create nuisance. Again we have a recognition of the technological facts of life and a challenge to rigid Euclidean zoning. Perhaps many Boards have followed this sensible approach and have been concerned about actual performance of different possible uses all along without bandying about the term "performance standards." Perhaps many Boards have actually tried to do an essential job—to adjust.

But it has been claimed that Boards often misuse zoning "in making the changes, for other than the public interest," and "that the irresponsibility of boards of appeals in granting hardship variances" is widespread.[28] Recently there appeared a judicial answer which voiced a truth that is too often ignored. Public and private interests are not always mutually exclusive. The court said in *State* v. *Wieland*[29] that the "protection of property values is an objective which follows within the exercise of the police power to promote 'general welfare' . . . anything that tends to destroy property values of the inhabitants of the (municipality) necessarily affects the property and therefore the general welfare of the entire (municipality)." In light of the glib assumption that is all too prevalent—that public and private interests are antithetical —the aforementioned judicial observation merits more widespread reflection.

It is true that the attempt to evaluate each land use problem on its own merits presents new problems. Certainly the possibilities of abuse have to be seriously considered. Attempts must be made to curb irresponsibility by these Boards as well as other governmental agencies. But such facts as the increased realization that neighboring buildings with widely different uses can be so designed and located as to maximize the general welfare and the increased questioning of a system that dictates how vacant land should be developed many years before the owner wants to use it, should compel questioning as to whether these Boards are inherently at fault.

I believe with Chief Judge Learned Hand that "a government of laws without men is as visionary as a government of men without laws; the solution will always be a compromise based on experience."[30] The shortcomings of the traditional districting device, the fact that after more than a thirty-year interval the legal requirement that zoning be in accord with a comprehensive plan is more of a hope than a reality, the confusion (and frustration) concerning the role of these Boards—all these point out that they have not lived up to the great expectations of the theorists.

It is clear then that a fundamental reappraisal of zoning is overdue. Such cases as the *Rodger* v. *Tarrytown* and the *Church* v. *Town of Islip* deserve more intense study. The new approach towards improving community development probably will involve the use of more careful and widespread performance standards pertaining to use of land and structures. Together with this improvement, better techniques of ascertaining the thinking and wishes of neighboring land and building users is also a desirable goal.

Leading thinkers and practitioners from the fields of political science, planning, and law should thrash out ways of using Boards of Appeal more effectively. Put another way, we must do more than persistently criticize functioning that has not lived up to theory. Wiser it is to adjust theory in the light of reality.

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[28] Hugh R. Pomeroy, "Planning and Land Use Controls," *The New York State Planning News,* Albany, New York, July–August 1960, p. 6. More recently in an address to the Municipal Law Section of the New York State Bar Association, Mr. Pomeroy has labeled the actions of these boards as "the weakest part of zoning administration." Hugh R. Pomeroy, "Modern Trends in Zoning," *The New York State Planning News,* Albany, New York, September–October 1960, p. 4.

[29] 269 Wisconsin 262, 69 N.W. 2d 217 Cert. Den. 350 U.S. 841, 100 L. Ed. 750, 76 Supreme Court 81.

[30] Learned Hand, "The Deficiencies of Trials to Reach the Heart of the Matter," *The Association of the Bar of the City of New York, 1926,* Handbook, 1926, pp. 89, 102.

Suburbanization and Some of Its Consequences

THIS paper is an exploration into what residents are seeking in the suburban movement and the extent to which they realize their objectives. Further, some of the consequences of this movement in terms of accessibility to and participation in several important aspects of community life will be explored. This study is based on 670 direct interviews of a random sample of household heads in the Flint (Michigan) Metropolitan Area. Because of the differences in population size the fringe area was sampled at 3.5 times the rate in the central city. The sample design resulted in 353 respondents in the city and 317 in the fringe. In both areas the response rate exceeded 85 percent.

In an earlier study based on this sample it was found that the most frequent reason given for changing place of residence from the central city to the fringe area was to get "greater space and privacy."[1] Contrary to popular belief, lower taxes in the fringe was seldom mentioned as a reason for leaving the central city. In a series of questions on the relative advantages and disadvantages of central city and fringe living, it was found that nearly half of the present fringe residents reported that lack of space and privacy was the principal disadvantage of living in the central city. And among central city residents more than one-third mentioned that space and privacy would be the main advantage of living in the fringe area.

It is concluded, on the basis of our data, that the movement to the suburbs is largely a search for space and privacy. This finds support in the works of others.[2] We are led to ask, therefore, to what extent do fringe residents realize the greater space and privacy they seek? A partial answer is provided by data presented in Table I. When land area occupied by each resident is measured in terms of frontage feet, significant differences are found between the central city and the fringe area. In the central city more than three-fourths of the residents occupy lots which are under 60 feet in width as compared with less than three-tenths of the residents in the fringe area. In the large-lot categories, 75 feet and over, we find less than 14 percent of the city residents but 53 percent of the fringe residents. Thus, in terms of land area occupied, fringe residents do enjoy much more space than do city residents. That residents succeed in getting more space in moving to the suburbs is shown more clearly when lot sizes occupied by fringe area residents are broken down by their previous residential experience in the Flint Metropolitan Area. In Table II it is noted that persons who have moved into the fringe area from the central city enjoy larger lots than do resi-

TABLE I—Size of Lot by Area of Residence, City—Fringe

Lot Size (*frontage—feet*)	Area of Residence	
	City	Fringe
Under 40	8.4%	1.4%
40-59	68.7%	27.9%
60-74	9.4%	17.9%
75-124	11.1%	31.4%
125 plus	2.4%	21.4%

TABLE II—Lot Size in Fringe Area by Occupants Previous Place of Residence in Area

Lot Size (*frontage—feet*)	Previous Residence	
	Never Lived in City	Lived in City
Under 60	43.8%	26.2%
60-74	14.0%	19.3%
75 plus	42.2%	54.5%

[1] Basil G. Zimmer and Amos H. Hawley, "Resistance to Governmental Unification in A Metropolitan Community," *Community Political Systems*, Morris Janowitz, ed., (Glencoe, Illinois: Free Press, 1960).

[2] Richard Dewey, "Peripheral Expansion in Milwaukee County," *American Journal of Sociology*, September 1948; Betty Tableman, "Intra-Community Migration in the Flint Metropolitan District," University of Michigan Social Science Research Project, mimeographed (Ann Arbor, Michigan: 1948).

dents who have lived only in the fringe. Thus, of the residents who were a part of the movement from the central city, only one-fourth live on lots with less than a 60-foot frontage as compared with more than two-fifths of those who have lived only in the fringe. More than half of the former central city residents are found in the largest lot category as compared with only two-fifths of those who have lived only in the fringe area. Families moving out of the city not only enjoy more land area than do persons who continue to live in their former places of residence but they have even more space than residents who have lived only in the fringe.

Fringe residents of Flint typically live in medium-sized homes with from 4 to 6 rooms. As is shown in Table III, more than four-fifths of the fringe residents live in a dwelling unit of this size as compared with only two-thirds of the city residents. The latter are found disproportionately in small (3 rooms or less) and large (7 rooms or more) dwelling units. One would expect to find more city residents in units of three rooms or less because of the larger proportion of single and unattached individuals in the central city. However, even though families in the fringe tend to have more children, a larger proportion of the city families live in large dwelling units, particularly those who have never lived in the alternate part of the metropolitan area. It is noteworthy that city residents who formerly lived in the fringe tend to occupy the same size dwelling units as do fringe residents who have never lived in the city. But those who moved to the fringe from the city are most likely to occupy medium-sized dwelling units. The desire for space apparently does not extend to dwelling unit size but rather pertains only to land area. In part, centrifugal migrants seem to sacrifice room density to avoid neighborhood density.

What are the consequences of the suburban movement in respect to accessibility to important aspects of community life? It is to this question that attention is now turned. The data presented in Table IV clearly indicate that one of the "costs" of living in the fringe as compared with living in the city is "inaccessibility" to a number of facilities. It is found that, in the daily journey to work, 30 percent of the city residents travel less than two miles as compared with only 16 percent of the fringe residents. On the other extreme, only one-

TABLE III—Size of Dwelling Unit, by Previous Place of Residence in Area, and by Present Place of Residence: City-Fringe

Previous and Present Residence	Number of Rooms			
	Small (1-2-3)	Medium (4-5-6)	Large (7 plus)	Percent
City (Total)	9.5	67.1	23.4	100.0
Never lived in fringe.....	10.0	65.2	24.7	100.0
Lived in fringe.	7.4	75.0	17.6	100.0
Fringe (Total)	4.7	81.0	14.2	100.0
Never lived in city	11.0	74.0	15.1	100.0
Lived in city...	2.9	83.1	14.0	100.0

TABLE IV—Distance to Work, Church, Shopping Centers, and Schools by Place of Residence: City-Fringe

Place of Residence	Distance (miles)			
	WORK			
	Under 2	*2 to 5*	*5 plus*	*Percent*
City.....	29.2	50.9	20.1	100.0
Fringe.....	15.9	29.3	54.7	100.0
	CHURCH			
	Under 1	*1 to 5*	*5 plus*	*Percent*
City.....	39.3	54.6	6.1	100.0
Fringe.....	25.9	48.3	25.8	100.0
	SHOPPING CENTERS			
	Under ½	*½ to 1*	*1 plus*	*Percent*
City.....	57.0	21.2	21.8	100.0
Fringe.....	23.6	17.4	59.1	100.0
	ELEMENTARY SCHOOL			
	Under ¼	*¼ to ½*	*½ plus*	*Percent*
City.....	67.2	19.7	13.1	100.0
Fringe.....	31.9	19.4	48.7	100.0
	HIGH SCHOOL			
	Under ¼	*¼ to ½*	*½ plus*	*Percent*
City.....	12.7	8.9	78.4	100.0
Fringe.....	18.8	18.0	63.2	100.0

fifth of the city residents travel five miles or more, whereas more than half of the fringe residents must do so. The modal distance to work for city residents is between two and five miles but for fringe residents it is in the five-miles-and-over category.

Similar city-fringe differences are found in respect to distance to church. Two-fifths of the city residents live within one mile of the church they attend as compared with only one-fourth of the fringe residents. In the more distant category, that is, five-miles-and-over, we find only six percent of the city residents but twenty-six percent of the residents in the fringe—a four-fold percentage point difference. Actually, differences in proximity to church in the two areas is probably much larger than this since a higher proportion of fringe residents never attend church and are excluded from this analysis. In an earlier study the authors found that church attendance decreased with distance to church. Thus it is assumed that those who do not attend would be found disproportionately in the more distant category.[3] However, this cannot be tested with these data since the distance question was not asked of those who never attended church.

Accessibility to shopping centers also varies among city-fringe residents. Whereas nearly three-fifth of the city residents live within one-half mile of a shopping center, we find less than one-fourth of the fringe residents in such proximity. In the one-mile-and-over distance category, we find three-fifths of the fringe residents but less than one-fourth of the city residents. Similar city-fringe differences are found in accessibility to elementary schools. In the city more than two-thirds of the residents live within one-fourth mile of an elementary school as compared with less than one-third of the fringe residents. The difference is even more marked in the most distant category, that is, one-half mile-and-over. Here are found approximately one-eighth of the city residents but nearly half of the residents in the fringe.

It is only in respect to high schools that fringe residents are more accessible than city residents. This is due to the large number of small, separate, and independent school districts in the fringe, each of which attempts to provide an educational program through the secondary level. As a result, there are several small high schools in the fringe area, whereas in the city district, with more than double the school population of all fringe districts combined, there are only three public high schools. Since the segmentation of school districts is not peculiar to Flint Metropolitan Area, it is likely that in other areas also fringe residents would be closer to a high school than central city residents. To speculate on the differential quality and completeness of the educational programs in the various schools is not within the scope of this paper.

In both areas residents are, on the average, much closer to schools than to shopping centers, and are closer to the latter than to church. Distance to work is greater than to any of the other facilities. These relative distances to facilities are consistent with the findings reported by others. For example, one author noted that "trips to work are short, but shopping, school, and church trips are shorter;"[4] and another study reported that trips to twenty other activities have been found to be shorter than work trips.[5]

In a more detailed consideration of accessibility to place of work it is observed that changes of place of residence across city boundary lines seems to have the effect of increasing the distance between place of residence and place of work. This is shown in Table V. The same differential pattern by previous place of residence in the area is found among central city and fringe residents.

In the city we find that more than twice as many of those who have lived only in the city live less than two miles from work; as is also found among those who formerly lived in the fringe area. The centripetal

[3] B. G. Zimmer and A. H. Hawley, "Suburbanization and Church Participation," *Social Forces*, May 1959.

[4] J. Douglas Carroll, "Home-Work Relationships of Industrial Employees," (unpublished doctoral dissertation Cambridge, Massachusetts: Harvard University, 1950) pp. 71–74.

[5] Donald L. Foley, "The Use of Local Facilities in a Metropolis," *American Journal of Sociology*, November 1950, pp. 238–246.

TABLE V—DISTANCE TO WORK BY PREVIOUS PLACE OF RESIDENCE IN AREA AND BY PRESENT PLACE OF RESIDENCE: CITY-FRINGE

Present and Previous Residence in Area	Distance			
	Under 2	2 to 5	5 plus	Total Percent
City				
Never lived in fringe.....	32.3	48.3	19.5	100.0
Lived in fringe.	14.8	63.0	22.2	100.0
Fringe				
Never lived in city.....	32.3	24.2	43.5	100.0
Lived in city...	11.2	30.8	58.0	100.0

migrants tend to be concentrated disproportionately in the two-to-five-mile category. In the fringe area only slightly more than one-tenth of the former central city residents live within two miles of their place of work as compared with nearly one-third of the residents who have lived only in the fringe area. The centrifugal migrants are concentrated mainly in the more distant category, that is, five-miles-and-over. Hence, distance to work does not appear to be an effective consideration in residential location for these people, though it may be for fringe-to-city migrants. It is of interest to note that, even though residents who moved into the city from the fringe area are less accessible to work than are other city residents, they are closer to work than are fringe residents. Only twenty-two percent of the city residents who formerly lived in the fringe are in the five-mile-and-over category as compared with fifty-five percent of all fringe residents. Thus, among the city residents who formerly lived in the fringe less than one-fourth live five miles or more from work as compared with more than two-fifths of those who have lived only in the fringe and nearly three-fifths of those who have previously lived in the city. Movement into the central city appears to decrease the distance between place of residence and place of work, but such migrants are less accessible to work than are other city residents.

Another consequence of the suburban movement is evident in the mode of travel used by the head of household to get to work. It is found that three times as many city residents (twelve percent) walk to work as do fringe residents (four percent). The latter are much more likely to drive to work alone (seventy-nine percent) than are city residents (fifty-one percent) whereas, city residents are more likely to share a ride by car (twenty-five percent versus sixteen percent) or ride the bus to work. Nearly eleven percent of the city residents report they ride the bus to work but less than one percent of the fringe residents use this mode of travel. This is to be expected for most of the fringe area is lacking in public transportation. That this is important is suggested by the responses to the question regarding advantages and disadvantages of living in the central city and fringe area. Nearly one-fifth of the fringe residents mentioned "good public transportation" as the main advantage of living in the city and one-fourth of the city residents reported that "lack of public transportation" would be the main disadvantage of living in the fringe area. It is particularly noteworthy, however, that seventy-seven percent of the city residents and ninety-six percent of the fringe residents travel to work by private automobile. This has serious implications both for the future of public transportation in the area and the expense involved in building highways to accommodate the heavy traffic flow. Suburbanization has followed the improvement of roads out from the central city and in turn has increased the demands for the expansion of the local road system.

In earlier studies reported by the authors it was found that place of residence within the Metropolitan area is related to level of participation in the formal organizations of the community as well as in church activities. Fringe residents are less likely to belong to formal associations and attend church less frequently than do city residents.[6] The question to be raised here is how place of residence is related to level of participation in informal relationships. Accordingly, residents in both areas were asked a series of questions regarding their relationships with friends. Responses to

[6] B. G. Zimmer and A. H. Hawley, "The Significance of Membership in Associations." *American Journal of Sociology*, September 1959; and, *op. cit.*

these questions show that residents in both areas tend to have about the same number of friends; however, fringe residents have less frequent contact with friends than do city residents.

Previous residence in the opposite part of the Metropolitan area does not seem to be important in frequency of contact with friends among city residents but does have a significant effect on the residents who have moved into the fringe areas. Among former central city residents nearly half are in the least frequent contact category as compared with only slightly more than one-third of the residents who have lived only in the fringe. Distance to friends may account for this difference as suggested in Table VI.

TABLE VI—DISTANCE TO FRIENDS BY PREVIOUS PLACE OF RESIDENCE IN AREA AND BY PRESENT PLACE OF RESIDENCE: CITY-FRINGE

Distance (*Miles*)	Total		City		Fringe	
	City	Fringe	Never Lived in Fringe	Lived in Fringe	Never Lived in City	Lived in City
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
Under ¼	8.8	5.1	9.1	7.8	12.7	2.8
¼ to 2	28.8	15.2	30.2	23.4	23.8	12.7
2 to 4	35.9	21.0	35.5	37.5	20.6	21.1
4 and over	26.5	58.7	25.2	31.3	42.8	63.4

Marked differences are found between central city and fringe residence in accessibility to friends. Nearly two-fifths of the city residents live within an average distance of two miles from their three most frequently visited friends, as compared with only one-fifth of the fringe residents. Conversely, nearly three-fifths of the fringe residents live more than four miles from their friends whereas only slightly more than one-fourth of the city residents are found in this category.

Accessibility differences among city residents by previous place of residence in the area are small, with those who have lived only in the city being somewhat closer to their friends than are other city residents. Movement out from the city does have a significant effect on accessibility to friends, however. It is noted that more than one-third of the residents who have lived only in the fringe are within two miles of their friends as compared with less than one-sixth of the residents who have formerly lived in the city. In the more distant categories, that is, four-miles-and-over, we find nearly two-thirds of the former central city residents but only two-fifths of the residents who have lived only in the fringe.

That distance to friends is an important factor in frequency of contact is shown in Table VII. In both areas the average dis-

TABLE VII—DISTANCE TO FRIENDS BY FREQUENCY OF CONTACT BY PRESENT PLACE OF RESIDENCE: CITY-FRINGE

Frequency of Contact	Distance (*Miles*)							
	City				Fringe			
	Under 2	2 to 4	4 plus	TOTAL	Under 2	2 to 4	4 plus	TOTAL
Frequently	51.1	32.3	16.7	100.0	29.6	25.4	45.0	100.0
Occasionally	38.9	40.3	20.8	100.0	20.7	28.3	50.9	100.0
Rarely	27.7	33.8	38.5	100.0	15.9	16.7	67.4	100.0

tance to friends increases as frequency of contact decreases. Still, in all frequency of contact categories, distance is much greater among fringe residents. Among city residents who frequently have contact, only seventeen percent live four miles or more from their friends, as compared with forty-five percent of the fringe residents. In the least frequent contact group we find that less than two-fifths of the city residents are in the more distant category, but more than two-thirds of the fringe residents.

In conclusion, the data for the Flint Metropolitan Area provides further support for the hypothesis that in the movement out of the central city to the suburbs residents are seeking space and privacy. Apparently they want to get away from the neighborhood density of the central city. However, the typical fringe resident, and more particularly the former resident of the central city, lives in a medium-size dwelling unit even if it is on a large lot. Fringe residents, in search of space, sacrifice the accessibility and convenience of city living. They must travel greater distances in the daily journey to work, to church, to shopping areas, to elementary schools, and to friends. Also the suburban movement tends to decrease the level of participation in informal activities. Former central city residents are less accessible to and have less contact with friends than do other fringe residents or residents of the central city.

In this wide-spread settlement pattern the private automobile becomes the almost exclusive mode of travel, thus placing heavy demands on the local road system. It is noteworthy that when central city residents were asked the main disadvantage of living in the fringe the most frequent responses were "inaccessible and inconvenient" and "lack of public transportation."

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